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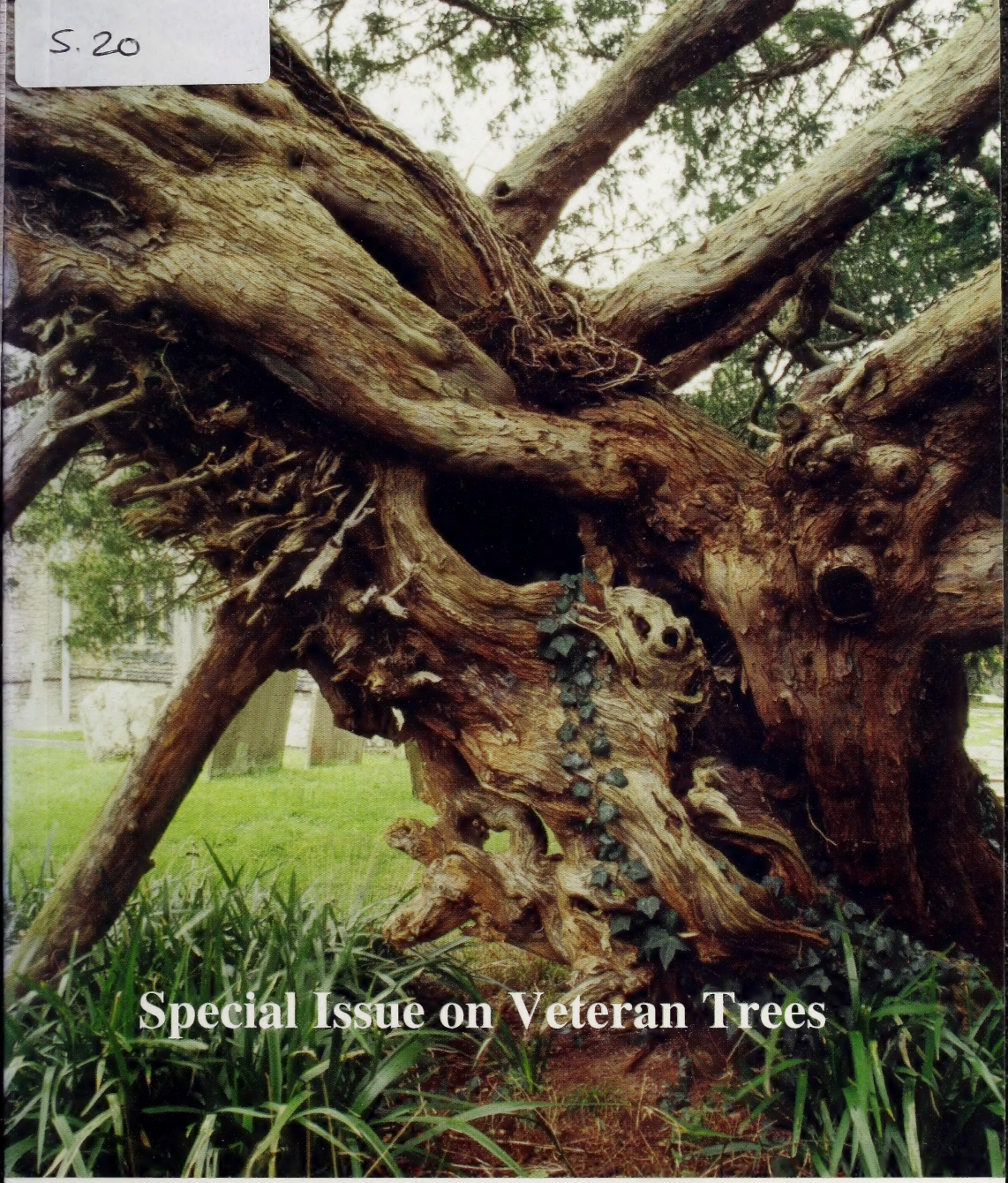

Special Issue on Veteran Trees

# Nature in Avon

2001 Volume 61

## Bristol Naturalists' Society

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# NATURE IN AVON

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VOLUME 61 (for 2001)

EDITED BY TERRY SMITH

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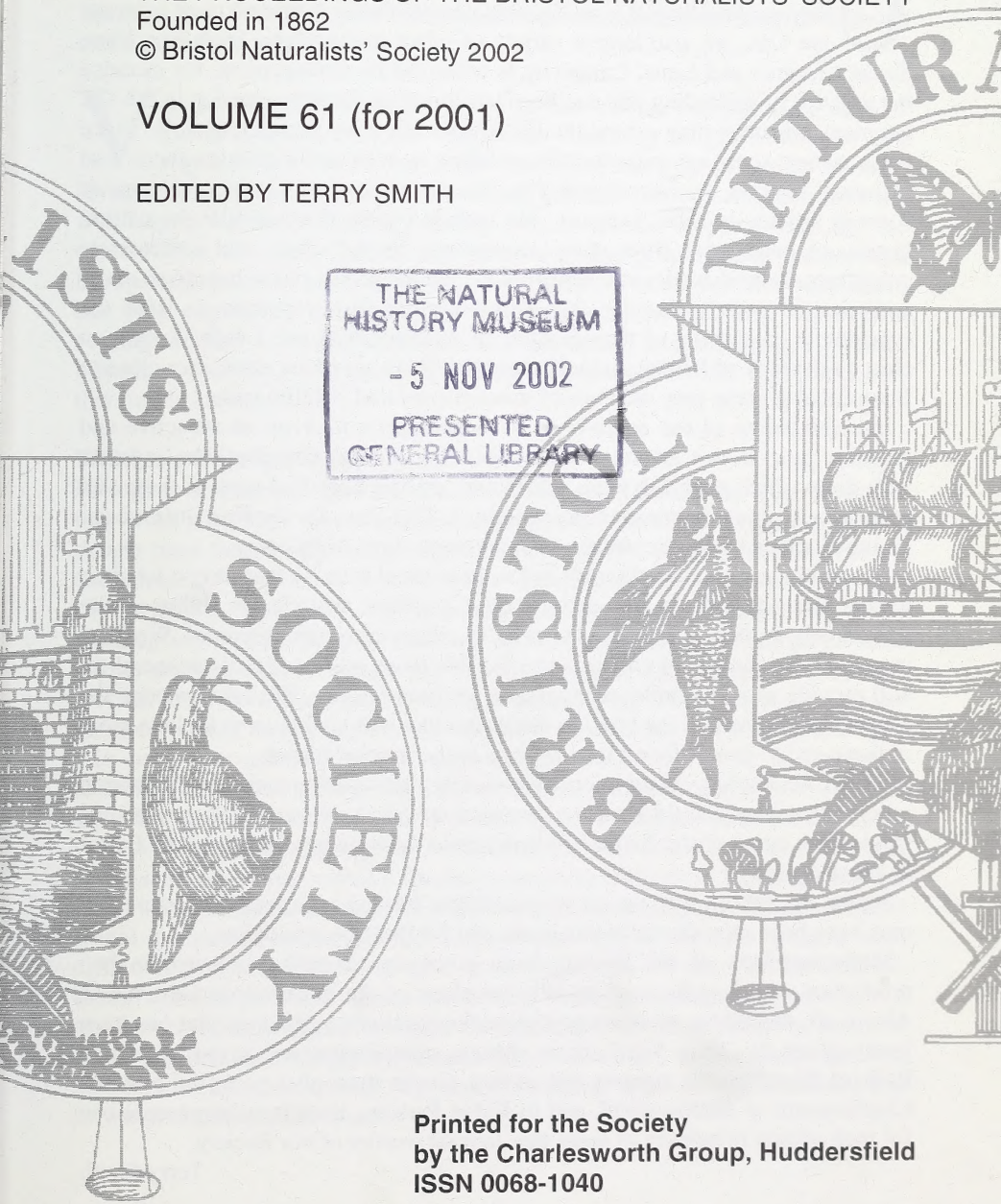


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## EDITORIAL

Unlike continental Europe, England has many ancient trees, and the area surrounding Bristol is well endowed with these. Although most veterans are Oak, we also have a variety of other ancient trees, including Yew, Sweet Chestnut and Lime. Longevity is enhanced by management; for instance the practice of pollarding that has been traditional in forestry practice in the UK for many centuries may extend the life of some trees by as much as 50%. Since these ancient trees are important for wildlife, as well as for their aesthetic and historical interest, we have decided to devote much of this issue of *Nature in Avon* to articles on these veterans. We include papers that consider the natural history of these trees from many viewpoints; from forestry and invertebrate colonizers, to biodiversity and distribution. We are privileged in having so many authoritative contributors for this issue. We are also fortunate to have the remarkable collections of ancient trees in Ashton Court and Leigh Woods, so close to the City of Bristol, but recognise that there are many other sites close to Bristol that possess very old trees of great interest and wildlife value.

In continuation of our endeavours to make *Nature in Avon* an attractive and readable journal, we are once more including shorter contributions, together with those which are much more substantial, and we hope that most of these still reflect the regional interests of our members. This year, for the first time we are giving citations of the occurrence of uncommon fungi in this area.

We continue to include literary items, in particular those that have a local or topical interest, and we also add pictorial graphics, though our ability to use these freely is often limited by the need to obtain copyright approval. We have increased the number of colour plates for this issue, and trust that our members will provide us with similar photographs for future issues. We acknowledge the substantial bequest by the late Jim Redmond that will enable us to include more of these and to make other improvements in the Journal format.

Whilst welcoming contributions, we would urge members wishing to submit articles that they should read the *Instructions for Authors* reproduced on the inside back cover of the Journal. Adherence to these makes the life of the Editor so much easier.

Again, the Editor must accept responsibility for any typographical errors that may have been reproduced in this issue, and for these he apologises.

Many members of the Society have given considerable assistance in the production of this volume, especially members of the Publications Committee. Above all, the Editor must acknowledge the invaluable guidance that has been freely given by Tony Smith in its design, compilation and revision, and to Richard Bland for his support and advice. Credit must also go to the printers, Charlesworth of Huddersfield, and to Ridge Parsons, their local representative, for their efforts in helping to make this Journal worthy of our Society.

Terry Smith

*Proceedings of the Bristol Naturalists' Society (2001)* ***61****:3-25*

# VETERAN TREES AND THEIR CONSERVATION: THE BRISTOL CONNECTION

Neville Fay and Tony Robinson

*Work in the Bristol region has influenced our understanding of veteran trees and their management.*

Veteran trees are an exciting part of our natural heritage. The sight of gnarled ancient trees can conjure up images of former landscapes in a way that no other living things can. They are able to tell us as much about the past as any ancient monument and yet until recently their conservation was largely ignored. Britain, though, has a special responsibility for the conservation of veteran trees as it is home to a large proportion of the northern European population (Green, 2001). Fortunately, over the last few years there has been a growing recognition of this responsibility and there has been a coming together of conservationists, tree specialists, archaeologists, landscape historians, and others to meet the challenges presented by the conservation of this fragile heritage.

## What is a Veteran Tree?

Biologists and conservationists like to define and classify the organisms that they work with. Ever since Linnaeus published his classification system in 1753 people have been categorising organisms by species, genera, families, orders, and classes. We can now even place whole plant communities into neat compartments, and name, for example, specific types of woodland. Those working to conserve veteran trees are not so fortunate, as the objects of their efforts are less easy to define. For a start, they are not dealing with a single species, nor even a taxonomic group, as trees occur across the range of botanical families, orders, and classes; so even defining a tree is not straight forward.

In something called 'veteran', age might be expected to be an important defining factor, and indeed it is, but different species of tree age in different ways and at different rates. A Birch, *Betula* spp that has been alive for a hundred years, is an old tree, although the same cannot be said of a Yew, *Taxus baccata*, of the same age. Even within a species it would be difficult to fix an age beyond which an individual tree could be regarded as being a veteran. Any age selected would be purely arbitrary, and in any case ageing trees is fraught with difficulties, although size can give some indication (White, 1998). Rule-of-thumb definitions based on size have been used; for example any tree with a trunk over 1.5m in diameter could be considered to be valuable in terms of nature conservation (English Nature, 1996). However, such a definition will naturally exclude tree species (e.g. those belonging to the family Rosaceae) that do not attain these dimensions.

For those interested in veteran trees for their nature conservation value, the condition of a tree can be just as important as either its age or size. Those features of veteran trees which provide wildlife habitats, such as dead-wood, cavities, or sap runs, are not restricted to very old trees, but are often present on relatively young trees, having been induced either by natural damage or by human intervention, for example by cutting. Unfortunately none of this makes it any easier to answer the question 'what is a veteran tree?' The simple fact is that veteran trees cannot be neatly categorised like other features of conservation interest. Various attempts have been made to define them (Read, 2000) but the following broad definition is widely used and embraces the many values that veteran trees represent –

> 'Veteran trees are trees which, because of their great age, size or condition, are of exceptional value culturally, in the landscape, or for wildlife' (English Nature, 2000a).

## The Aging Process and its Value to Wildlife

Throughout its life, a tree lays down new tissue every year over the entire under-bark surface, enveloping the growth of the previous year. This is known as the current annual increment. The growth rate of this new wood is influenced by the amount of available energy. If the tree is placed under physiological stress then its ability to generate new wood is impaired. Also, if parts of the tree are under mechanical stress the tree may direct growth to produce wider increments in these areas. This is termed 'adaptive growth' and provides the means to build wood around areas of weakness and to incorporate wounds within the body of the ageing tree. This often results in a protective barrier zone around the wound area, a process known as 'compartmentalisation', and also in the strengthening of the region of adaptive growth as the tree grows to minimise the mechanical stresses imposed upon it (Shigo and Marx, 1977; Mattheck and Breloer, 1995).

When the outer covering of bark is damaged, exposing underlying wood to the atmosphere, the partial drying of exposed wood tissue and the change in moisture environment triggers the activity of fungi. Both internal, latent, fungi and colonising micro-organisms from the outside take advantage of the energy supply in the exposed tissue. The tree is usually able to lay down new tissue around the area of degraded wood and isolate the wound area. This ability of the tree to continue laying down new annual increments over a partially degraded core is important ecologically, for it is the dead wood within the still-living tree that is vital to so many other organisms.

As the tree enters late maturity, having optimised its potential crown size, the outer canopy starts to restrict the amount of light reaching the leaves of the inner branches. Areas of the crown die, limbs are shed and there is a further increase in fungal activity.

In the veteran stage the current annual increment is spread progressively more

thinly over an ever-increasing area. This affects the foliar condition resulting in reduced leaf size and overall cover. Many trees at this stage begin to die back while new growth develops at lower points in the crown as light penetrates to these regions. This is known as 'crown retrenchment' and is followed by rejuvenation of the canopy at a lower level, a process that may occur many times in the life of a veteran tree. The veteran stage may be the longest period in the tree's life and there are many examples of veteran trees that have collapsed and the fallen parts taken root, each giving rise to a 'new' tree. It is even conceivable that a tree could live forever if this type of 'phoenix' regeneration repeated indefinitely.

The above describes the natural course of the ageing process. However, the physiology of most broadleaved trees is such that they can withstand repeated cutting. This may even have a rejuvenating effect, which means that trees that have been managed by pollarding (see below) have several advantages over those left to develop naturally. For example, their root system does not have to support a large crown, transport distances between leaf and root are reduced, and being shorter they are less prone to wind damage (Lonsdale, 1996, 1999). The problem, as we shall see later, arises when the cycle of management is interrupted.

It is the ageing process and the development of dead wood that ultimately provides the habitat for a range of other organisms for which veteran trees are important; saproxylic insects feeding on the dead wood (Key, 1996), bats using the cavities for roosting (Holmes, 1996), and lichens and bryophytes using the ageing bark as a substrate (Rose, 1991). The value of veteran trees to nature conservation cannot be overstated. There are species of lichen and invertebrate that are found almost exclusively in association with veteran trees; some are even limited to a few individual trees. For example, the beetle *Hypebaeus flavipes* is known from just six trees in Moccas Park in Herefordshire (Harding and Wall, 2000). Continuity of the veteran-tree habitat is therefore of utmost importance to the survival of such species.

## The Origins of Veteran Trees

The fact that so many organisms found on veteran trees require a continuity of habitat suggests that the trees themselves may be a direct link with remnants of the 'wildwood' that re-colonised the British Isles after the last Ice Age. During that re-colonisation, species that had taken refuge in warmer latitudes gradually found their niches in the slowly evolving ecosystems of more northerly zones (Rackham, 1986). Veteran trees and their dependent fungi, lichen, and beetle communities may have been co-existing ever since that time. Given the longevity of certain veteran trees it is possible that fewer than ten generations may link them back to the wildwood.

It has generally been assumed that the wildwood in Britain consisted of more

or less unbroken woodland until clearances by humans began in the Mesolithic (Peterken, 1996). However, an alternative view is emerging which suggests that in lowland Europe the natural landscape evolved through the primary influence of large grazing herbivores (such as the auroch and tarpan, predecessors of the domestic cow and horse, as well as bison, red deer and wild boar) and that in some areas the vegetation structure was a mosaic of grassland, scrub, and scattered trees, set within the more widespread matrix of closed canopy forest (Vera, 2000). While this model of ancient vegetation may be somewhat controversial, it could help explain the origins of wood pasture, an ancient system of land management that uses the same ground for both trees and grazing animals. Many veteran trees appear to have originated in such wood-pasture systems and then survived through subsequent changes in the landscape.

## Working Trees

In the British landscape, veteran trees have survived for a variety of reasons. Most were at one time 'working trees' which were regularly pollarded to provide a renewable supply of boughs and branches for fuel or fodder, and cut at a height at which the re-growth was out of reach of browsing animals. As such they were a valuable resource in pre-industrial societies and worthy of protection (Green, 1996). The only known pre-twentieth century description of pollarding comes from *The Art of Husbandryie* of 1523: "If a tree be heeded and used to be topped and cropped at everye xii and xvi yeres ende ....it will beare moche more wood by process of tyme than if it were not cropped and much more profyte to the owner ... and beware that thou croppe him not in sappe tyme." (Read, 1991). Such trees are found in the greatest concentrations in landscapes that have seen relatively little change, such as former Royal Forests, wooded commons, and medieval parks where they formed an important component of the local land use.

Pollards and lapsed-pollards are the most frequent type of veteran tree but many others exist. Other forms of working trees are coppice, almost entirely associated with woodland; coppards, trees originally managed as coppice and later pollarded to avoid the attentions of browsing animals; and shredded trees, which have all their side branches cut back repeatedly with just a tuft of branches retained at the top (rarely seen in Britain, but a common practice, even today, in countries such as France). Material from working trees once had a wide range of applications that included fodder for animals, small-dimension wood for dead-hedging and fencing, clog-footwear and firewood. In later times, larger dimension wood was used for carriage making and house, canal and boat construction.

Although Oak, *Quercus* spp is the species most often associated with veteran status, there are also large numbers of veteran Beech, *Fagus sylvatica*, and Hornbeam, *Carpinus betulus*, particularly in the south of England. Examples

also exist from around the country of veteran Ash, *Fraxinus excelsior*, Holly, *Ilex aquifolium*, Hawthorn, *Crataegus monogyna*, and Willow, *Salix* spp., all of which often played an important part in the local system of land use. With such a variety of species and histories it is not surprising that veteran trees can be found almost anywhere. In addition to the great concentrations found in parklands etc. they can also be found in many other situations such as upland grazed woodlands, in hedgerows (often on parish boundaries) on riverbanks, orchards and even in towns, while many churchyards have afforded centuries of protection to ancient Yews (Read, 2000).

## The Changing Fortunes of Veteran Trees

Periodically old trees have been under considerable pressure, particularly when grazing levels intensified, when produce demands rapidly expanded and during times of radically changing local economic conditions. While it is likely that individual trees were lost during battles and skirmishes, there appears to be little evidence that this led to a significant reduction in the tree population. Rackham (1986) notes that in Ireland during the 'evil years' between 1600 and 1654, marauding armies might indiscriminately cut trees for timber or because they got in the way of fighting, however these would be expected to re-grow. Elsewhere he comments on the influence of agricultural economics on trees and hedgerows, referring to the period of agricultural prosperity in England between 1750 to 1870, when the number of hedgerow trees decreased, and the period between 1870 to 1951, a time of agricultural adversity, when the numbers doubled due to the general neglect of hedgerows. Rackham argues that trees in parkland and hedgerows, rather than in woodlands, would be the main providers of shipbuilding and house-building timbers. Limbs selected for their shape and size (for crucks, knees or bends) for construction might be riven or sawn usually for local use, but where branches were of particular dimensions they might be sold for special projects and transported considerable distances.

Pollarding declined during the nineteenth century and the creation of new pollards largely ended (with the notable exception of riparian willows). One of the reasons that Rackham advances for this is the shift in the ownership of pollard products from tenant to landlord and the resulting decline in value to the common user. Whatever the reason, the days of the working pollard were coming to an end.

The utilitarian value of trees was heavily driven by mechanised forestry during the early part of the twentieth century, particularly after the First World War when the Forestry Commission was strategically orientated to the demands of economic forestry with requirements to maximise production of saw-log trees. Old and gnarled pollards with their crown stems and abundant dead wood rising from ancient hollow trunks, having low economic value for sawmill

produce, were left standing while semi-mature and mature trees of maiden form were felled.

In the modern world veteran trees face a range of threats to their health and survival. Felling (often on the grounds of a perceived hazard to public safety), disease, fire and vandalism are obvious threats, although changes in land management practice in their immediate vicinity can also have a severe impact. Ploughing, soil compaction by livestock or vehicles, and the application of herbicides and fertiliser can all have a serious effect on the trees, or on the other organisms that they support.

Despite their changing fortunes through the ages, veteran trees have often been valued culturally, playing a role in myths, religion, and art. For example, in the late eighteenth century the appreciation of the cultural and landscape values of veteran trees are expressed in the paintings of stag-headed old Oak trees and the drawings of hedgerow pollards of great character. Mendelssohn, Shelley, Byron and other poets and artists drew inspiration from visits to wood-pasture sites such as Burnham Beeches (Read, 1991, see page 47). The visionary designs of William Kent, Lancelot 'Capability' Brown, Humphry Repton and the followers of the Romantic Movement led to the conscious inclusion of trees of great character and significance in the newly designed parkland landscapes.

The significance of veteran trees in our cultural life is demonstrated by the abundance of named trees across the country, many associated with historical events, festivals or legends. Perhaps the best known is the Major Oak in Sherwood Forest linked to the legend of Robin Hood, although, as we discuss below, the Bristol region is not without its own cultural heritage of veteran trees (Morton, 1998).

## Ashton Court, Leigh Woods and Leigh Court

The sites of Bristol's best-known major collections of veteran trees are connected through their common history and the evolution of their landscape management. For example, at Ashton Court, there are wood-pasture elements that are a direct link with the medieval deer park. This landscape in turn is connected to Leigh Woods to the north, where a substantial number of ancient lapsed Oak pollards in the region of Stokeleigh Camp provide clues to a history of grazing (Rackham, 1986; Lovatt, 1989). Further to the north and west beyond Paradise Bottom, Leigh Woods merges into the designed landscape of the Leigh Court Estate.

*Ashton Court Veterans*: (Plates 1a, 1b, 2a, and 2b). Ashton Court has one of the finest collections of veteran trees (c. 440) in the UK and occupies some 350 ha. Records relating to Ashton Court go back as far as the eleventh century. 'Aestune' (Ashton) was first recorded in the Domesday survey. This contains references to the valley in Leigh Woods, owned by the Bishop of Coutances (The Sheriff of Bristol Castle), where war-horses were bred. It does not

however, refer to the best known tree in Ashton Court, the so-called 'Domesday Oak' (Plate 1a) which despite the folklore is probably only a mere six or seven hundred years old!

*Ashton Court history*: The original emparkment at Ashton Court was granted in 1393, by Royal licence from Richard II to Thomas de Lyon, and occupied some 100 ha within a walled enclosure to retain deer. From that time onwards the ownership of Ashton Court is well documented. In 1545 it was acquired by the Smyth family who owned the estate until 1959 when it was purchased by the present custodians, Bristol City Council (Sumner, 1986).

*Southwest wing of Ashton Court*: Seventeenth century estate records refer to payment for the sawing and carriage of timber used for scaffolding and building, as well as for the making of the stairs and for picture framing (Bettley, 1978). It is likely that suitably sized and shaped Oak pollard limbs would have been selected for the architectural joinery and building work associated with the south-west wing extension of Ashton Court. Subsequent periodic additions and alterations to the house are also likely to have drawn on similar timber resources from the estate.

*Repton's influence*: In the early nineteenth century Humphry Repton came to influence the landscape design of the area. He visited Ashton Court Estate, probably in 1801 (Sumner, 1986). Although having made proposals for the estate, the work was to be carried out by another designer, probably to save costs (Land Use Consultants, 1992; Casing *et al.*, 1982). Repton was later to visit Leigh Court in 1812 and place his mark on its landscape. Today, Ashton Court Estate is entered on English Heritage's Historic Parks and Gardens Register (English Heritage, 2001).

*Landscape constancy*: Until the end of the nineteenth century the southern part of Leigh Woods was included within the Ashton Court Estate and managed as grazed wood pasture. Paintings and watercolours from the early eighteenth century depicting pollards in wood pasture in Leigh Woods and at the head of Nightingale Valley (Greenacre, 1973; Greenacre and Stoddart, 1986) offer a testimony to the constancy of a landscape had barely altered since medieval times.

*Landscape engulfed*: In the twentieth century, aerial photographs document the felling of a large area of Leigh Woods during the Second World War and the later grubbing-out of a large part of Oak Wood in the 1950s. Although little of this felled area had previously been wood pasture, much of Repton's designed landscape with its veteran trees was engulfed by the subsequent replantings with non-native tree species (Lovatt, 1989).

## Bristol and Beyond

Within a 15-mile radius of Bristol there are many more of the finest veteran trees in Britain. A current survey of old trees in the Bristol area, undertaken with

public involvement, has to date recorded 138 veterans. The criteria for veteran status in this survey have been taken quite broadly. However the trees surveyed include Oak trees that are estimated to be 700 and 900 years old according to White's system for ageing trees (White, 1998). Data from this survey are held at Bristol Regional Environmental Records Centre.

There are several fine individual examples of veteran trees within the City boundary. At Bishops Knoll, Sneyd Park there is a major Pedunculate Oak, *Quercus robur* (6.7m in girth - measured at 1.5m above ground level) in Woodland Trust ownership. It pre-dates the formal Victorian pleasure gardens and is estimated to be over 600 years old, having survived on the edge of a terraced landscaped garden overlooking the Avon Gorge. This old pollard and its neighbours are thought to originate from a time when Sneyd Park was a deer park within Stoke Bishop held by the Bishops of Worcester until the Reformation.

Other important areas of historic wood pasture within the city boundary include the Stoke Park, Oldbury Court and Blaise estates. Repton visited Blaise in 1795 and made a strong impression with his picturesque design. He intended to translate the inherent landscape features and topography of the estate into natural compositions, and in this the trees played a significant part. The estate is now considered to be one of the best examples of Repton's work and is designated Grade II on Historic Parks and Gardens Register (English Heritage, 2001). Although there are a number of living trees that have survived from the Repton period, there are few on the estate that pre-date this. There are, however, two fine Pedunculate Oaks that appear to be derived from an older landscape, and which are estimated to be over 400 years old. Beyond the estate, in Blaise Hamlet, are more old pollards that probably pre-date the nine cottages of the Hamlet, and may be the remnants of a former wood pasture.

Figure 1: Hunstrete – veteran Oak on arable land (*Neville Fay*).

To the south of Bristol there is a wonderful network of lapsed hedgerow pollards throughout the area from the Dundry slopes, through the Chew Valley and intermittently extending over the northern slopes of the Mendips (Fig. 1). A broad scattering of open-grown field trees of mainly pollard derivation and of parkland character, also covers the area. Fine examples have been noted in Publow, where an Oak over 500 years old was found (which the youthful Acker Bilk is reputed to have set on fire!), and at Hunstrete House Hotel, where an

ancient Oak tree is recorded as being the first Somerset record of a little owl residence (Janes, 1987; Mitchell, 1966). A count of large-girth trees in the Chew Valley in the 1980s gave 33 trees over 4.5m in girth. A more recent estimate of the number of veteran trees in the Chew Valley and adjoining area exceeds 600.

Beyond Bristol to the north are some exceptional ancient Oak pollards with a notable wood-pasture specimen in North Nibley (Fig.2) having a girth of 9.8m and estimated to be over 1000 years old. There are other ancient trees of considerable girth nearby in the Falfield area, and beyond. These are in turn linked to the Ash wood–pasture pollards which extend into the Cotswolds.

Figure 2: Magnificent veteran Oak (estimated to be over 900 years old) on farmland near North Nibley (*Neville Fay*).

The Tortworth Chestnut: (*Castanea sativa* Sweet Chestnut) is particularly noteworthy (see pages 52 and 55). Announced by the plaque that is attached to the entrance gate, this extraordinary tree is reputed to have been 600 years old in January 1800. It is more recently celebrated by Rackham (1986), Pakenham (1996), and Morton (1998). This tree is a phoenix specimen whose crown collapsed and layered to propagate some eighteen trunks most of which are still connected to the parent trunk, although some have individuated. This single tree is now generating what appears to be a small wood although, in reality, each of the smaller trunks is part of the same tree, and therefore already 800 years old.

## Clarken Coombe

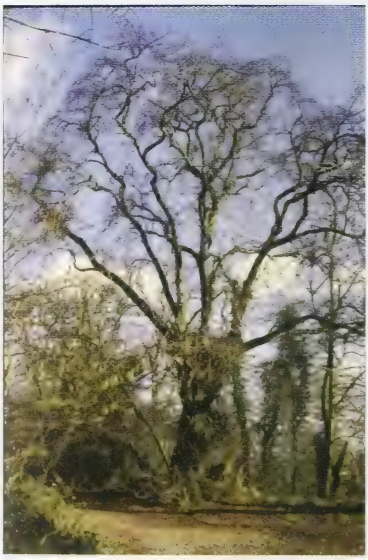
We return now to Ashton Court to look at one part of the estate that has played an important role in the development of veteran tree conservation. The main grouping of veteran trees at Ashton Court is found in the south west of the estate in Clarken Coombe (or Clarkencombe) where there are some 222 pollards that have survived within an area that was once cattle-grazed common land and then later included within the deer park (Plate 2b).

The Clarken Coombe trees have the character of 'giraffe' pollards showing different cutting heights reflecting the changes in the type of browsing animals present during the development of the trees. Early in their lives the trees were

probably browsed by cattle, and this would have determined the height at which they were cut. However, the enclosure of the park in the nineteenth century meant the introduction of deer, which were capable of browsing at a greater height, and subsequently the trees would have been pollarded at a higher point.

As elsewhere, pollard management in Clarken Coombe ceased in the middle of the nineteenth century, so permitting the development of tall and spreading pollard crowns. Then when grazing ceased during the Second World War, self-sown Ash and Sycamore became established and in time started to compete with the Oak veterans. The growth of pole-stage Ash eventually developed to the point where, by the end of the 1980s, they had over-topped the veterans.

Figure 3: Leigh Woods – large Small-leaved Lime lapsed pollard (*Tony Robinson*).



## Early Attempts at Veteran Tree Management

The plight of the veteran trees at Clarken Coombe was not unique. The value of many veteran trees is associated with regular management by pollarding over a long period of time, often centuries. Although, even historically, it was not unusual for a proportion of such trees to die every year (Rackham, 1980), the decline of the practice from the nineteenth century onwards led to there being many lapsed pollards carrying much larger branches than before on rotting boles, and without the periodic rejuvenation which regular pollarding had provided. Such trees were more vulnerable to collapse and wind damage (Mitchell, 1989).

Although some work was done to reinstate the practice of pollarding in Epping Forest in Essex as early as the 1940s (Dagley and Burnham, 1996), it was not until the 1970s and 1980s that interest in developing restoration techniques really took hold as a result of pioneering work, notably in Hatfield Forest, also in Essex (Sisitka, 1991), and Burnham Beeches in Buckinghamshire (Read *et al.*, 1991).

*Veteran tree conservation*: Little documentation on the practice of pollarding existed at that time and so those who were brave enough to attempt work on their trees were doing so with little information, and often in isolation from others carrying out similar experimental work. As a first step in bringing such

people together, the Corporation of London hosted a meeting on 6 March 1991 at Burnham Beeches. The proceedings of this meeting were published as *Pollard and veteran tree management* (Read, 1991), which was for five years the main source of information for those interested in the conservation of veteran trees.

## Restoration Work at Leigh Woods

Just a few weeks before the meeting in Burnham Beeches, the Nature Conservancy Council (English Nature from 1 April 1991) had carried out restoration pollarding on an ancient pollard in Leigh Woods, possibly the first such tree to be cut in the Bristol area in the twentieth century. The particular tree was chosen because, being in a prominent position, it was well known to visitors to the woods and so presented an ideal opportunity to provide on-site information to prepare the public for the re-introduction of a woodland practice that had been absent for around 100 years. An additional reason for choosing the tree was that it was a *Tilia cordata* Small-leaved Lime, a species which can survive even the most severe mutilation; success in this new venture was, therefore, almost guaranteed (Figs 3 and 4). However, most of the old pollards in Leigh Woods are Pedunculate Oak, which is much less resilient. The following year, five Oak trees in the Nightingale Valley area of the woods were selected for restoration pollarding and where possible this work was done in accordance with guidelines provided by Mitchell (1989).

Figure 4: Leigh Woods – Small-leaved Lime as in Fig 3 following restoration pollarding in 1991 (*Tony Robinson*).

Following these initial trials, a full survey of all the ancient pollards in the former wood pasture of Leigh Woods was carried out during the winter of 1992/93. All trees were photographed, measured, plotted on a map, and had a small plastic numbered tag attached to them. Comments were also made on the health of the trees and an assessment made of their ability to survive restoration pollarding. A total of 194 trees were tagged. Of these 149 were alive and healthy, 16 were moribund and 29 were dead (Avon Conservation Service, 1993). On the basis of this baseline survey a programme was drawn up to carry out restoration pollarding on 123 of the trees over a 20-year period. The plan incorporated a programme for the clearance of younger trees from around the

veterans to reduce competition and let in light. In most cases this was to be done a few years in advance of restoration pollarding to allow the veterans time to adjust to more favourable conditions. Trees were cut according to this plan every year up to and including 1998 by which time 43 had been done. In 1998 English Nature transferred the management of the woods back to the owners, the National Trust, and no more trees have been cut since that time (Morris, pers. comm.).

## Restoration Work at Ashton Court

While the work on the veteran trees in Leigh Woods was done largely for nature conservation reasons, and to maintain what remained of the wood-pasture character of the woods, at Ashton Court the landscape value of the trees was a significant factor.

In 1990 Bristol City Council began formulating a whole-estate restoration plan and commissioned Land Use Consultants to prepare a report on the historic landscape. This highlighted the historic and biological importance of Clarken Coombe and Pill Grove wood pasture and commented upon the observed decline in the Clarken Coombe oaks (Land Use Consultants, 1992). This initiative led to grant support from Countryside Stewardship and from the Historic Parks and Gardens Scheme. The restoration proposals recognised the great importance of the veteran trees throughout the estate and noted that a number of Oaks had died while others were susceptible to serious decline where the competitive growth was extensive and dominant.

Figure 5: Clarken Coombe – old Oak pollard with extensive Ash and Sycamore competition in the background (*Neville Fay*)

Bristol City Council plotted all the veteran Oak trees, and Treework Environmental Practice were then commissioned to carry out a detailed appraisal, assessing their existing condition and identifying the steps to be taken to safeguard their future. The work was jointly funded by Bristol City Council and the Countryside Commission (through Task Force Trees), and began in 1993 against the background of the landscape restoration proposals, which intended to re-incorporate the ancient Oaks within the deer park.

Competitive growth was clearly adversely affecting the veterans, and a number of attenuated pollard stems showed a stressed foliar appearance (Fig 5). Recording of the trees showed that bole heights ranged between 4m and 6m. These boles had developed over-loaded crown limbs of between 100- and 250-years old. In the majority of trees, trunks were extensively hollowed and in many cases boles were only partially intact. There were cases where trunks were mere residual, discontinuous, husks of sound, though embrittled, wood and others where the main trunk had lost in excess of 60% of its circumference. Additionally there were a number of recently uprooted trees and crowns that had begun to disintegrate.

Figure 6: Leigh Woods – Children from Embleton Junior School, Bristol help launch the Veteran Tree Initiative on 11 November 1996 with a large veteran Oak (*Stephen Parker*).

The assessment showed an almost 10% loss in the population during the previous decade and highlighted a progressive domino effect of mechanical failure, where new crowns became exposed and vulnerable following the loss of adjacent canopy. It was considered that a future management strategy would need to steer a delicate balance to enhance tree vitality while undertaking appropriate arbori-cultural treatment to re-stabilise the crowns of the veterans. Treatments that involved crown reductions, to compensate for end-loaded pollard stems, ran the risk of reducing photosynthetic potential of the tree, which in turn would restrict its capacity for rejuvenation. Moreover, removal of the dominant Ash and Sycamore could also result in desiccation of exposed bark following an increase in wind circulation and light penetration (Fay, 1994).

It was considered that the trees were at a critical stage in a fragmentation process, and so in January 1994 work started around a central core of oaks, involving clearance of some 700 Ash and Sycamore. In this area a gradual approach to the removal of competition was not practicable, while in other sectors of Clarken Coombe a phased release from competition was advocated. Following the clearance work the veteran oaks were subject to a programme of crown restoration involving gradual weight reduction targeted at heavy and

unbalanced pollard stems, while attempting to maintain and stimulate as much fine twiggy (epicormic) growth as possible on the trunk and crown branch system. The trees were photographed prior to undertaking the arboricultural work and again in the following summer to monitor the response to treatment.

## The Ancient Tree Forum

Meanwhile, at a national level, interest in veteran trees had been gathering momentum, and in 1993 the Corporation of London had hosted a second meeting, this time at Epping Forest, that later resulted in the publication of a new and more substantial *Pollard and veteran tree management II* (Read 1996). This second meeting was soon followed by the formation of the Ancient Tree Forum (ATF) by a group of enthusiasts co-ordinated by Ted Green and Keith Alexander who were interested in veteran trees and their management.

News of the work at Clarken Coombe attracted the interest of the Ancient Tree Forum and on 30 May 1995 Treework Environmental Practice and Bristol City Council jointly hosted a meeting at Ashton Court to discuss and review all of the issues relating to the Clarken Coombe Oaks. This stimulated vigorous debate about the management of veteran trees and the range of individual methods that were being used for surveying them. From this emerged a strong need to harmonise the various approaches to surveying and recording. Following a series of consultative meetings the idea of developing a specialist method for recording veteran trees was taken up by the Veteran Trees Initiative.

Figure 7: Clarken Coombe – Pedunculate Oak in summer 1996 showing vigorous response to crown restoration treatment. Pollarded in winter 1994 (*Neville Fay*).

## The Veteran Trees Initiative

In English Nature, the growing interest in veteran trees was recognised and supported by the establishment of the Veteran Trees Initiative (VTI), a partnership project involving the Ancient Tree Forum, Corporation of London, English Heritage and the National Trust, amongst others, with the aim of collating information on veteran trees, and promoting their conservation. The VTI was formally launched in Windsor Great Park at 11 am on 11 November 1996 by David Bellamy, who was accompanied by a group of school children under one of the great oaks in the park. Being the eleventh-of-the-eleventh, the scene was replicated by

another 10 school groups at other veteran-tree sites across the country, including children from Embleton Junior School, Bristol who took part in an event at Leigh Woods (Fig. 6).

One of the first actions of the VTI was to commission Treework Environmental Practice to develop their veteran tree recording system, building on experience gained at Clarken Coombe. This was published as the Specialist Survey Method (English Nature, 1997). It operates at three Levels; an Introductory Level for the non-specialist enthusiast, an Intermediate Generic Level and the detailed Specialist Level.

During the course of three years the VTI ran a series of over 20 demonstration events and training workshops for landowners, land managers, tree surgeons and others to help set new standards of best practice in the management of veteran trees and the landscapes in which they grow. The very first of these was held at Leigh Woods in February 1997 and included a practical demonstration of restoration pollarding by tree surgeons. The following year Ashton Court was the venue for one of the training workshops, which was over-subscribed to such an extent that a further two were held there a year later.

Reflecting the importance of parklands as sites for veteran trees, the VTI hosted a Parklands Symposium in May 1998, which attracted a cross section of delegates from the breadth of disciplines involved in parklands (Bullock and Alexander, 1998). The VTI also produced a number of publications on veteran trees and their care, including a practical management handbook and guidance on safety issues (English Nature, 2000a, 2000b; Read, 2000; Davis *et al.*, 2001). The Veteran Trees Initiative formally ended in 2000, although, as we explain later, the work to conserve veteran trees goes on.

## Lessons from Early Work

An important element of the VTI was the promotion of best practice in the management of veteran trees. This best practice was distilled from the experience of many people gained during the early attempts at managing veteran trees. In defining best practice it was important to learn the lessons from this early work, including that done in the Bristol area.

At Clarken Coombe the results of the 1994 course of treatment were evaluated in 1996 (Fig.7). Here, 54% of the trees had been affected by the clearance of competing Ash and Sycamore, and 35% were subject to tree surgery (Fay, 1996). Subsequently, a further major assessment has been carried out over the whole estate including both Clarken Coombe and the parkland. This has included an assessment of the population dynamics on the estate. The Clarken Coombe population evaluation indicated that while there had been minimal tree failure between the 1994 and 1996 surveys, the mortality rate between 1996 and

2001 was about 20%. This failure rate corresponded to the number of trees identified as being in marked decline during the previous surveys (Fay, 2001).

Treated trees at Leigh Woods were also surveyed during 2001. Of the 43 trees, eight (19%) were found to have subsequently died. Nearly all of these deaths appeared to have occurred in situations where it had not been possible to leave much in the way of living branch material on the cut stems at the time restoration pollarding was carried out. The subsequent growth of *Hedera helix* Ivy over the cut stems was implicated in the death of six of the trees. It is worth noting that the early restoration experiments at Hatfield Forest, Epping Forest and Burnham Beeches had also experienced a considerable number of failures (Sisitka, 1991, Dagley and Burnham, 1996; Read *et al.*, 1996).

One of the conclusions relating to tree failure in relation to management programmes is that while many trees may benefit from measures designed to address threats that have built up over a period of time, those veterans that are noted to show signs of marked decline may be pushed beyond recovery by the very treatment intended to restore their condition. Where restorative measures coincide with other, or new, factors that may adversely affect the root zone of trees then this can result in a spiral of decline. For example, following the restoration work in Clarken Coombe the area was enclosed within the extended deer park in 1996. Additional compaction associated with the introduction of the deer at that time may have had a bearing on tree health.

For the time being the majority of the living veteran tree population at Clarken Coombe appear to fare reasonably well in the light of the re-evaluation. This has been used to update past data and to formulate a long-term management programme for all veteran trees on the Ashton Court Estate, as a major component of a Heritage Lottery funded landscape restoration project. This evaluation has included the identification of the quality of the deadwood habitat and outlines management prescriptions for individual trees in the light of their present condition. By these means it is intended to consolidate and strengthen the veteran-tree and wood-pasture habitat through this century and into the next.

## Recent Developments

The Specialist Survey Method, as used at Clarken Coombe, has been one of the major outcomes of innovative work on veteran trees in the Bristol region. The method has been used in countywide surveys in Hampshire, Somerset and Norfolk, and is also now being applied in Scotland. It is estimated that some 12,000 veteran trees have now been recorded using the method.

Recently Treework Environmental Practice has further developed the survey methodology to include a method for quantifying the habitat and tree associates (termed 'Level 4'), involving habitat evaluation scores to enable assessments and comparisons to be made within and between sites. Additionally the elaborated system provides the means to evaluate tree vitality and stability, to

inform and develop a management programme designed to span a thirty-year period. This is undertaken for all surveyed trees and used to evaluate overall viability and trends in the population. Treework has incorporated this system into a database for collating, analysing, and reporting survey data. The system has been applied at Ashton Court, Richmond Park, and Hatfield Forest allowing comparisons between the sites to be made. Early analysis shows that there are similar patterns of decline and proportions of viable trees at each site. It is still early days, but the evaluation of population dynamics looks very interesting and is beginning to show some alarming indicators that the structure of the veteran tree population that we take so much for granted is more fragile than previously thought.

The continued development of the survey method is just one of the ways in which efforts to conserve veteran trees is continuing. The Ancient Tree Forum (through a partnership with the Woodland Trust) is continuing to communicate via its web site, meetings, and discussion groups, to raise awareness of the importance, value and fragility of the veteran tree heritage. The ATF now has representation covering the British Isles, and its initiatives include supporting the development of a national veteran trees database, and fostering links with similar groups throughout Europe.

Much of the nature conservation effort in this country today is being directed through the implementation of Biodiversity Action Plans including one that has been drawn up for lowland wood pasture and parkland, a habitat which is very important for its veteran trees (UK Biodiversity Group, 1998). All of the former partner organisations in the VTI along with many others are contributing towards the achievement of the targets set out in this plan (Kirby and Reid, 2000).

Local Biodiversity Action Plans are also being published, and the Bristol plan aims "to conserve and enhance ancient trees and their associated species and habitats in Bristol" (Bristol City Council, 2000). The plan identifies 10 – 20,000 ha in the area of Bristol that is to be protected and maintained in favourable ecological condition, and a further 2,500ha to be restored. It also aims to create 500ha of new habitat by the year 2010. To meet these targets, a primary objective has been set: to identify all ancient trees and obtain detailed information on them and their conservation value, and to obtain information on the extent of the wood-pasture habitat within Bristol.

Parklands are being looked at in a new light and parkland Sites of Special Scientific Interest (SSSI) are being notified. Ashton Court, for example, was notified as an SSSI in 1999 largely as a result of a survey of Coleoptera, in Clarken Coombe, which found eight 'nationally scarce' species (Alexander, 1997). However, many feel that because there are many veteran trees growing outside wood pasture or parkland, the notification of more parkland SSSIs is not adequate to protect our veteran tree heritage, and that the time has come to

consider notifying individual trees as SSSIs (Green, 2001). An alternative may be the landscape approach, now being adopted by some conservation organisations, which addresses the conservation of features that lie outside special sites (RSPB, 2001).

## A Landscape Approach to Veteran Tree Conservation

The historic and geographic connection between Ashton Court, Leigh Woods and the scattered veteran trees found in their vicinity make the area an important landscape of linked habitats, irrespective of its artificial boundaries. Many of the compartmented distinctions that are made are due merely to issues of ownership rather than biology.

The area from Clarken Coombe, through Leigh Woods to the former deer park of Leigh Court embraces populations of veteran trees that, although somewhat fragmented, are inherently linked. Spatial continuity is just as important as temporal continuity for many of the species associated with veteran trees (Read, 2000), so when considering the overall management of this landscape complex, it should be regarded as a substantial, and species-rich, mosaic of linked veteran-tree and deadwood habitats.

The aggregated area covers some 600 ha. It is considerable both in its scale and in its topographical variation. The scale of the ancient tree cover is regionally and nationally significant in its own right. As knowledge of this veteran-tree habitat network deepens and becomes more widely appreciated it may increasingly be compared with celebrated and well-documented historic landscapes such as Hatfield Forest and Burnham Beeches.

In the light of the potential importance of linked habitats, future assessments of the biological value of the wood pasture and parkland in the Ashton Court – Leigh Woods complex might be expected to consolidate and add value to the status of the district. This is, in part, addressed in the Bristol Biodiversity Action Plan (see article by Sophia Price, page 49 in this volume), which aims to "review the management of areas that can be considered as wood pasture with a view to increasing their ecological value ...". (Bristol City Council, 2000). However, this plan will need refining if the concept of a habitat network is to be brought into sharper focus.

## Bristol as an Inspiration to Others

The Bristol region has been a source of inspiration for the development of veteran tree surveying and management. This has led to rapid progress and has influenced thinking and practice amongst those involved in veteran tree conservation. The importance of this work is probably not well known by the people of Bristol themselves. While Ashton Court and Leigh Woods are exceptionally well known amongst the Ancient Tree Forum and its growing number of supporters, the great value and importance of the veteran trees and

their associated flora and fauna are not yet fully appreciated by the local population. It is hoped that Bristol City Council and other landowners will become aware of the fame of this nationally important habitat and the degree to which others appreciate their stewardship of it. It is hoped that this article will go some way to redress this by celebrating the veteran trees of the Bristol region.

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## Glossary of Terms

As tree managers tentatively developed techniques to conserve veteran trees, they either had to rely on traditional words or devise new ones to describe the trees and the work they were doing. This often led to confusion with different words being used to describe the same thing. With the exception of the third, which is our own, the definitions we use here are those used by Read (2000), although earlier authors may have used some of them interchangeably.

| | |
|---|---|
| *Bole* | The main trunk of a pollard. |
| *Crown reduction* | The reduction of branch length in part or whole of the crown. |
| *Crown restoration* | The staged and gradual reduction of a tree's crown over a period of years to a lower point of growth. The rate of restoration will relate to the vitality and stability of the crown. |
| *Lapsed pollard* | A pollard that has not been cut for many years. |
| *Maiden* | A tree that has not been modified by cutting. Unless it has been damaged by wind etc., it has its original natural crown. |
| *Poll (verb)* | The formative process of removing the crown of a young maiden tree creating a pollard. Often now referred to as pollarding |
| *Pollard (noun)* | A tree cut once or repeatedly at a height above which grazing animals can reach the regenerating shoots. |

| | |
|---|---|
| | Usually cut on a semi-regular basis, with the whole or part of the crown removed. |
| *Pollard (verb)* | The act of cutting an already created pollard. (originally a noun derived from the transitive verb 'to poll', now used as a verb in its own right.) |
| *Re-pollarding* | A confusing word, used in the past for both pollarding and restoration pollarding, - best not used. |
| *Restoration pollarding* | The re-establishment of a cycle of pollarding on trees that have not been in a regular cycle for many years. |

Wood engraving by Thomas Bewick (1753-1828)

There is a quiet spirit in these woods
That dwells where'er the gentle south wind blows
Where, underneath the white-thorn, in the glade
The wild flowers bloom, or, kissing the soft air,
The leaves above their sunny palms outspread.
With what a tender and impassioned voice
It fills the nice and delicate ear of thought,
When the fast-ushering star of morning comes
O'er riding the grey hills with golden scarf;
Or when the cowled and dusky-sandalled Eve,
In mourning weeds from out the western gate,
Departs with silent pace! That spirit moves
In the green valley where the silver brook,
From its full laver, pours the white cascade -

Left -

From 'The Spirit of Poetry', *Atlantic Souvenir* 1826. Reproduced from 'The Works of Henry Wadsworth Longfellow', Nimmo, Hay and Mitchell, 1894. Longfellow was an American poet who lived from 1807-1882

*Proceedings of the Bristol Naturalists' Society (2001)* ***61****:26-37*

# THE IMPORTANCE OF VETERAN TREES FOR BRISTOL'S INVERTEBRATES,

Dr. K. N. A. Alexander

*Veteran trees provide the widest range of wood-decay habitats and three recent surveys reveal the extent of specialist invertebrates in Bristol.*

## The Decay Process

The single most important feature of veteran trees for invertebrates is the decay process carried out by certain non-pathogenic fungi. The inner growth rings of trees gradually cease to perform any function so far as the living tissues are concerned. As new annual rings continue to be laid down, the older ones are first stripped of useful materials which are readily re-mobilised and transferred, waste products of metabolism are deposited, and then they are completely abandoned by the tree, *i.e.* they die. This provides a valuable resource for fungi to exploit (Smith, 2002). The decay succession that then results provides one of the richest habitats for invertebrates anywhere (Alexander, 1999).

Decay fungi break down the dead woody tissues and this eventually produces a hollow cavity within the tree, more or less surrounded by the living tissues. As the decaying tissues are already dead, the fungi do not harm the tree. Indeed hollowing is believed to be beneficial to the tree by breaking down the dead tissues and transforming them back into materials the tree itself can re-absorb through its roots.

Hollowing affects the tree trunk and the larger boughs and roots. Additionally veteran trees also support a huge variety of other wood-decay habitats. They possess branches of the full size range possible for the particular tree species, a root system similarly diverse and declining from its period of maximum development, areas of dead bark, areas of exposed heartwood where bark has been damaged, and a wide variety of cavities.

## Types of Place Rich in Wood-Decay Invertebrates

A very high proportion of the wood-decay invertebrate species are relatively immobile and poor at colonising new sites. This has meant that they have become increasingly confined to a declining number of special sites nationally, to sites where there have always been sufficient veteran trees and wood-decay for the invertebrates to be able to maintain viable populations. The types of places that have had a long and unbroken history of veteran trees include medieval forests, chases and deer parks, ancient wooded commons, and a miscellany of other situations such as flood plain Willow pollard systems, as found on the Somerset Levels. These types of situation are referred to

collectively as ancient wood pastures, and the fauna associated with them as relict old forest species.

A history of grazing has reduced the amount of tree regeneration, providing each individual tree with a greater chance of having plenty of space in which to grow. Key features of these places are therefore large open-grown trees – trees that have had sufficient space for full canopy development to take place, without competition from neighbouring trees. Full canopy development means the full development of potential wood decay and hence the full complement of habitat for wood-decay invertebrates. Also, the grazing has often affected the tree species composition, by favouring trees with less palatable foliage (Vera, 2000) – hence ancient Oaks at Ashton Court Park but strong Ash and Sycamore regeneration where grazing has been removed.

## Bristol's Veteran Trees

The main concentration of veteran trees in the Bristol area lies south from the Avon Gorge, in Long Ashton and Abbots Leigh parishes (Fay and Robinson, 2002). Here there are two sites – Ashton Court Park and Leigh Woods – which were formerly linked together as part of the larger Ashton Court Estate. Veteran Oak pollards are the main feature of interest, although there are also Ash, Beech, Lime, Hawthorn, and other species. Elsewhere in the Bristol area individuals and groups of veteran trees are also important in providing stepping stones for invertebrates to move between the larger sites.

## Invertebrate Information

Ashton Court Park has been studied by a number of entomologists in recent years and knowledge of the invertebrate fauna is steadily building up. The author has carried out a number of entomological surveys in recent years for Bristol City Council (Alexander, 1997 and 1998) and for the National Trust (Jackson and Alexander, 2001). Looking through D.B. Atty's *Coleoptera of Gloucestershire*, 1983 and A. Duff's *Beetles of Somerset*, 1993, the two published beetle faunas of the area, it is possible to find just over 200 different beetle species recorded from the Bristol area that are dependent on decaying wood. If one adds in the less well-documented wood decay invertebrates – two-winged flies (Diptera), wasps, moths and others - then the total probably would double to over 400 species. These rough and ready figures demonstrate the great importance of dead and decaying wood as a resource for wildlife in this small part of western Britain.

Information on Leigh Woods has recently been reviewed by the National Trust following their taking over its management from English Nature in 1998. Information gathering on other sites has been more haphazard and is largely based on casual visits by amateur entomologists.

Ashton Court Park and Leigh Woods arise time and time again when looking through localities in the beetle lists for specialist wood-decay species. Ashton Court Park appears to have attracted dipterists much less. Leigh Woods features a lot in the old Diptera lists, but Ashton Court much less so. Beetle records are the most organised and accessible at the moment although the wood-decay interest is by no means confined to them. The other major invertebrate group involved in wood-decay is the two-winged flies (Diptera) but apart from hoverflies (Syrphidae), these are a relatively poorly studied group and the local records are not easily accessible. Of course, Bristol entomologists have historically been very strong on Diptera and we are currently seeing a return to active documentation of the fauna.

The following sections are organised to provide details of the more significant invertebrate species that are known to occur in sites in and around Bristol. The officially recognised British status is indicated for each species, where Nationally Scarce Category B means that it is believed to be found in 100 or fewer of the 10km grid squares of Britain, Category A in 30 or fewer, and Red Data Book species in 15 or fewer grid squares. Further explanation of these statuses may be found in P. S. Hyman's *A review of the scarce and threatened Coleoptera of Great Britain*, 1992, and S. Falk's *A review of the scarce and threatened flies of Great Britain,* 1993.

## Ashton Court

Ashton Court Park is an important site locally for at least eleven species of wood-decay beetle. The fauna is predominantly one characteristic of stands of ancient wood pasture dominated by Oak, although with a presence of other tree species such as Beech and Ash, and flowering shrubs such as Hawthorn and Elder. It comprises species dependent on heartwood decay and fruiting of the wood-decay fungi.

*Plegaderus dissectus* Erichson (Nationally Scarce Category B). This histerid beetle is confined to ancient wood pastures, where it lives in moist crumbly decaying wood within various broad-leaved trees. It feeds especially on the larvae of other wood-decay insects. The only Somerset record according to Duff (1993) is the author's record from Ashton Court Park in1991. It is found across central southern and eastern England and as far north as Nottinghamshire, but is largely absent from the west.

*Stenagostus rhombeus* (Olivier). The larvae of this click beetle (Elateridae) develop under loose bark on the deadwood of various broad-leaved trees, most frequently Beech; it may also be found in the relatively soft decaying heartwood beneath. It feeds on the larvae of longhorn beetles (Cerambycidae). The adults are very short-lived, crepuscular and nocturnal, and are attracted to light. It is a widespread species in central and south-east England, but increasingly scarce westwards. Duff (1993) lists this species only from Clarken Coombe Wood,

Ashton Court Park (1991 and 1992) and Gordano Valley NNR, (1986), all by the author. The author found it again in the 1995/96 survey, also in Clarken Coombe Wood. The Bristol Regional Environmental Records Centre additionally holds records from Leigh Woods, Stokeleigh Camp area in 1992 (R Corlett, pers. comm.).

*Diplocoelus fagi* Guérin-Méneville (Nationally Scarce B). Until recently, this biphyllid beetle was exclusively associated with Beech, the adults occurring under bark on deadwood, particularly the loose outer layer, where it is believed to feed on specialist fungi. In 1998 it was found in association with sooty bark disease *Cryptostroma corticale* on Sycamore logs in the London area but exploitation of this new habitat has not yet been reported elsewhere within its British range. Adults over-winter in deadwood, even moving to other species such as Oak to do so. It has long been known as a speciality of ancient woodlands and wood pastures. It is widespread in south and south-east England. The author's 1992 record was the only Somerset record known to Duff (1993).

*Enicmus brevicornis* (Mannerheim). A mould beetle (Lathridiidae) associated with mouldy bark of Beech, Birch, Ash, Sycamore and probably other tree species. It appears to have increased in numbers and range in recent years in relation to the development of sooty bark disease on Sycamore. It is widespread in central and south-east England. The author's 1992 record was the only Somerset record known to Duff (1993).

*Phloiotrya vaudoueri* Mulsant (Nationally Scarce B). (Plate 3a) This false darkling beetle (Melandryidae) develops in the relatively soft dead sapwood of boughs and trunks of Beech and Oak in particular, but also other tree species. It is widespread in lowland England, except the far south-west and the north; almost invariably in areas of ancient wood pasture. Duff (1993) only lists the author's 1990 record for Nettlecombe Park for Somerset although there is a specimen from Ashton Court Park in the collections at the Natural History Museum in London. The author has rediscovered it in 1995/96 in Clarken Coombe Wood, Ashton Court Park.

*Conopalpus testaceus* (Olivier) (Nationally Scarce B). A false darkling beetle that develops in decaying boughs and branches on old trees, especially Oak. It is associated with ancient wood pastures and is widespread across central and south-east England, although rarer in the west. The author has found this species in Clarken Coombe Wood, Ashton Court Park, in 1995/96.

*Prionychus ater* (Fabricius) (Nationally Scarce B). (Plate 3b) The larvae of this darkling beetle (Tenebrionidae) most often develop in the black wood mould accumulating in the base of hollowing broad-leaved trees, often but not invariably beneath nests of birds such as jackdaw – a source of nitrogen, phosphorus and other nutrients derived from decomposing faecal remains, feathers and bones. It is also very occasionally found in accumulations of frass (invertebrate faecal remains) beneath loose bark on trunks and large boughs.

The adults are nocturnal and shelter during the day in crevices in tree trunks and branches. It occurs widely in wood pastures across southern Britain, but is absent from the far west. It is listed by Duff (1993) for Bickenhall (1952, A.H. Turner), Flax Bourton (undated, C. Bartlett) and Long Ashton (1919, C.T. Gimingham). Subsequently, it has been reported from Ashton Court Park by D. Boyce in 2000.

*Aderus oculatus* (Paykull) (Nationally Scarce B). This small aderid beetle develops in the moist crumbly red-rot of old hollowing Oaks; it has also been reared from Lime, Hawthorn, Beech and Sweet Chestnut. Adults are particularly attracted to Elder blossom. It is widespread in ancient parks and wood pastures of southern Britain, north to Yorkshire and west to Ceredigion. The author discovered this species new to the County in 1995/96 in Clarken Coombe Wood, Ashton Court Park.

*Aderus populneus* (Creutzer) (Nationally Scarce B). The larvae of this aderid probably develop in decaying heartwood, and it is associated with various broad-leaved trees. Over-wintering adults have been found in decaying straw stacks, and at Willow catkins and Hawthorn blossom in the spring. Apparently very localised in southern Britain, from the Severn across to East Anglia and Kent. A high proportion of the known localities are ancient wood pastures, including floodplain Willow pollard systems. Somerset records in Duff (1993) only list Frome (1942, K.G. Blair). The author found this species in 1995/96 in Clarken Coombe Wood, Ashton Court Park.

There is also a long list of wood decay beetles for the Long Ashton area from early in the 20th century (see Duff, 1983) and which includes many species that almost certainly still survive locally. The two more important species are as follows:

*Malthinus frontalis* (Marsham) (Nationally Scarce B). A soldier beetle (Cantharidae) associated particularly with large old and open-grown trees in parkland or other situations. Formerly widespread but has become increasingly scarce. This is a rare species in Somerset according to Duff (1993) but includes 'Long Ashton' (1914-16, C.T. Gimingham).

*Pediacus depressus* (Herbst) (Nationally Scarce A). (Plate 3c) A flat bark beetle (Cucujidae) that is attracted to freshly cut or broken stumps; also reported from goat moth burrows. There is a very thin scatter of sites across England with even fewer modern records. Duff (1993) has just one record from Somerset: 'Long Ashton' (1915, C.T.Gimingham).

Two very rare hoverflies were found breeding in wood-decay by J.C. Hartley (JCH) at Ashton Court in 1961 (Levy and Levy, 1998):

*Myolepta potens* (Harris) (Red Data Book Category 1, Endangered). This hoverfly develops in water-filled rot-holes at the base of ancient Beech and other broad-leaved trees. It has only ever been found in Britain in the Avon Gorge and Somerset Levels areas. The late John Cowley discovered the species

new to the British list in the 1940s, from two localities on the Levels, and Fonseca subsequently found a single male in Blaise Woods in 1949. Collin (1950) reported another specimen collected by Dr E.E. Lowe from Coombe Dingle in 1945. JCH found six larvae in a rot-hole at Ashton Court in 1961 but it has not been found again anywhere and is feared extinct (Levy and Levy, 1998). It appears to be rare throughout its world range.

*Mallota cimbiciformis* (Fallén) (Nationally Scarce). The larvae of this hoverfly also develop in water-filled rot-holes, but of varying sizes and heights, and on a wide variety of small and large broad-leaved trees. It is a species of ancient wood pastures, found widely but sparingly across lowland England. Levy and Levy (1998) list four Somerset records, the most recent being of a larva reared at Ashton Court in 1961 by JCH.

## Leigh Woods

Leigh Woods also supports an important wood decay fauna characteristic of ancient wood pasture Oaks, but there is more of an emphasis here on other tree species, notably Beech, Lime, Ash, and Birch, reflecting the remarkable species-richness of the trees and shrubs of the Avon Gorge. Heartwood decay is again a key habitat type. Leigh Woods is picked out as a special place in Somerset for hoverflies in Levy and Levy (1998).

*Prionocyphon serricornis* (Müller, P.W.J.) (Nationally Scarce B). The larvae of this scirtid beetle are aquatic and develop in water-filled cavities in old trees, feeding on the detritus from decaying leaves. Beech trees - with their propensity for large root buttresses – provide particularly good cavities and produce the majority of records. The adult is an active flier, but short-lived and probably under-recorded as a result. It occurs widely across lowland England, but is scarcer in the west and north. The author discovered the species in Leigh Woods in 2000 and Duff (1993) gives only one other Somerset record, an undated report by R. Gillo from Claverton Down.

*Lucanus cervus* (L.). The Stag Beetle (Lucanidae); (Nationally Scarce B). (Plate 4a) The larvae develop in moist decaying wood at or below the soil surface, especially decaying roots of old stumps but also in the base of fence posts. Light, freely draining soils also appear to be important. The adults feed on fruit and sap and fly mainly at dusk and after dark. Its distribution is centred on the Thames, Solent and Severn Basins. Duff (1993) lists very few sites but includes Leigh Woods, 1976-79, R.V. Russell.

*Trichius fasciatus* (L.). Bee Chafer (Scarabaeidae). (Plate 4b) This particularly attractive beetle develops in the wood mould of decaying heartwood in large Birch stumps. Its sites tend to be open broad-leaved woodlands in river valleys. The adults fly to blossom and feed on the pollen, flying in warm sunshine. It is a very localised species nationally. The only record for Somerset given in Duff (1993) is for Leigh Woods, 1976-79, R.V. Russell.

*Stenagostus rhombeus* occurs in Leigh Woods as well as Ashton Court Park (see above for information on its biology) and Gordano Valley NNR (see below). The Bristol Regional Environmental Records Centre (BRERC) holds records from the Stokeleigh Camp area of Leigh Woods in 1992.

*Pseudocistela ceramboides* (Linnaeus) (Nationally Scarce B). The larvae of this darkling beetle develop in the wood mould within hollow Oaks, and also to some extent in Beech and other species. The adults are generally only found in small numbers, particularly when they come to blossom of Hawthorn. It occurs widely in the old wood pastures of central southern and eastern England. Duff (1993) only lists Leigh Woods (1990, R.J. Barnett), Nettlecombe Park (1988, K.N.A. Alexander), and Wellington (1908-15, F. Milton).

*Stenostola dubia* (Laichasting) (Nationally Scarce B). The larvae of this longhorn beetle bore into and pupate in dead branches and twigs, possibly preferring freshly dead ones and not more than 25mm diameter; and usually branches lying on the ground. Native Lime, especially *Tilia cordata*, seems to be the key factor in its presence or absence at a particular site, although it will develop in Common Lime *Tilia* x *vulgaris*; it has also been recorded from Alder, Elm, Hazel, Oak, Rowan, Whitebeam and *Salix* branches. It is widespread in England and the Welsh Borders, but most frequent in a band of country from the Cotswolds to the North York Moors; it appears to be confined to ancient woods and wood pastures. Duff (1993) only lists Leigh Woods (1990, R.J. Barnett).

There are a number of old records of key beetle species that may still survive locally.

*Hypulus quercinus* (Quensel) (Red Data Book Category 2, Vulnerable). A false darkling beetle developing in the decaying wood of Oak, Hazel and Birch, especially in old stumps. It is confined to ancient wood pastures and is mostly known from east and south-east England. Duff (1993) only lists Leigh Woods, the records dating from the turn of the 19-20$^{th}$ centuries.

*Ischnomera sanguinicollis* (Fabricius) (Nationally Scarce B). (Plate 4c) This red and green oedemerid beetle develops in old relatively soft dead wood of Wych Elms and probably Ash and other tree species. The adult beetles are most often encountered when they are feeding at blossom. The species is most frequent in the ancient woods and wood pastures of central southern England. Rare in Somerset (Duff, 1993) but including Leigh Woods (J.H. Bailey, 1898).

*Grammoptera variegata* (Germar) (Nationally Scarce A). A longhorn beetle with larvae feeding on the outer sapwood of dead upper branches in Oak, Pear and Sweet Chestnut trees. The adults are attracted to blossom. Duff (1993) only lists Leigh Woods (undated, C.T. Gimingham; and 1950, J. Cowley).

There are three recent records of wood-decay species of two-winged fly.

*Paraclusia tigrina* (Fallén) (Red Data Book Category 2, Vulnerable). The larvae of this clusiid fly develop in decaying wood of broad-leaved trees. It is

highly scattered across southern Britain. It was found in Leigh Woods by E.C.M. d'Assis Fonseca in 1980 (Parsons, 1986).

*Astiosoma rufifrons* Duda (Red Data Book Category 2,Vulnerable). The larvae of this fly develop in debris in hollow trees. Adult flies are attracted to cold wood ash; and may feed at sap. Leigh Woods (1985, reported in Falk, 1991).

*Stegana coleoptrata* (Scopoli) (Nationally Scarce). The breeding habits of this drosophilid fly remain unclear although all of the evidence suggests that it needs decaying wood. Reported from Leigh Woods by Fonseca in 1983 (Parsons, 1986).

Levy and Levy (1998) give details of five interesting hoverfly species which develop in wood-decay and which have been found in Leigh Woods. The records are all fairly old but these species potentially survive here.

*Brachyopa insensilis* Collin (Nationally Scarce). The larvae of this hoverfly feed on decomposing sap in sap-runs on various broad-leaved trees. It is widely scattered across Britain but with very few sites in the south-west. Levy and Levy (1998) list only three records for the whole of Somerset, including one from Leigh Woods (1950, J. Cowley).

*Brachypalpus laphriformis* (Fallén) (Nationally Scarce). (Plate 5b) A southern old forest hoverfly species in Britain, the larvae developing in rot-holes in tree trunks and in wet decaying roots. Known from only five Somerset localities (Levy and Levy, 1998) including Leigh Woods (1944, E.E. Lowe, and 1950, E.C.M. d'Assis-Fonseca).

*Criorhina asilica* (Fallén) (Nationally Scarce). (Plate 5c) This hoverfly probably develops in wet-rot in the roots of broad-leaved trees. The adults are most often noted feeding at Hawthorn blossom. Only nine Somerset localities in Levy and Levy (1998), including Leigh Woods (1929, L.F.H. Audcent).

*Criorhina ranunculi* (Panzer) (Nationally Scarce). (Plate 6a) This hoverfly develops in the decaying heartwood in the roots of old trees and stumps, especially Beech. Fourteen locality records in Levy and Levy (1998), including Leigh Woods (1944, Fonseca).

*Pocota personata* (Harris) (Red Data Book Category 2, Vulnerable). This hoverfly develops in rot-holes, especially in Beech but also Ash, mostly high in the tree canopy. It is a southern relict old forest species. Levy and Levy (1998) have records from just four localities including one very old one from Leigh Woods (1841, G.H. Verrall).

### Gordano Valley NNR

The large old Willow pollards of this area of grazing marsh support some interesting beetle species (Alexander, 1987). This is another site for the click beetle *Stenagostus rhombeus* whose biology is discussed above under Ashton Court Park.

*Tetratoma desmaresti* Latreille (Nationally Scarce A). This fungus beetle (Tetratomidae) is most often associated with the dead lower, shaded out, boughs on mature and over-mature Oaks and is possibly associated with the wood-decay fungus *Stereum*. It is thinly scattered over much of lowland Britain. A new record for Somerset, found by the author in 1986.

*Anisoxya fuscula* (Illiger) (Nationally Scarce A). Larvae of this false darkling beetle develop in dead boughs and twigs of Ash, Willow, Beech and other broad-leaved trees. It is associated particularly with ancient wood pastures, including floodplain Willow pollard systems, such as at Gordano Valley NNR. It is known from Glamorgan to Kent and north to Yorkshire. A new record for Somerset, found by the author in1986.

The NNR is also picked out as a special place in Somerset for hoverflies in Levy and Levy (1998). The most interesting of the hoverflies is *Criorhina floccosa* (Meigen) (see back cover). The larvae of this hoverfly develop in wet decaying wood debris in cavities and roots of Elm, Sycamore, Beech and other broad-leaved trees. It is a widespread but scarce species over much of Britain.

### Combe Dingle and Blaise Castle Estate

Although the Diptera fauna of this area has been studied in some detail over the years, and does include a large number of wood-decay species, the site in fact today has only a few ancient trees. The fauna is essentially one of smaller wood decay, i.e., fallen branches and decaying tree trunks where the process of heartwood decay had barely started before tree death occurred. The fauna is also one of moist decay, favoured by the shady woodland conditions, and quite different in character to that known from the large open-grown trees of Ashton Court Park and Leigh Woods. The 1940s records for the rare hoverfly *Myolepta potens* are referred to under Ashton Court above.

### One Further Extreme Rarity – Noble Chafer

*Gnorimus nobilis* (L.) (Red Data Book Category 2, Vulnerable). (Plate 5a) The Noble Chafer was reported from 'Bristol' by G Harding of Clifton over 100 years ago and has not been reported in the region since. The record is included in V.R. Perkins' manuscript list of Gloucestershire beetles submitted in 1903 for the *Victoria County History* but never published (Atty, 1983). The beetle is superficially similar in appearance to the more widespread rose chafer *Cetonia aurata* (Linnaeus). It may survive locally and could even have been mistaken for that species in recent years – Rose Chafer is well known along the Avon Gorge and an unwary recorder may not closely inspect any large green chafers seen. The population between the River Severn and the Forest of Dean has until recently remained barely detected – Atty (1983) includes only two records, and yet we now know of a good scattering of breeding populations.

The larvae develop in soft decaying wood deep within hollowing old trees. At least two years are spent in the larval stage. Adults appear in late May or June (about the same time as Rose Chafer) but spend most of their time below the surface among frass and wood fragments. They apparently mate while buried and eggs are laid at random. The favoured trees in Britain appear to be Oak, Willow and orchard trees - Plum, Pear, Apple and Cherry, although Beech and False Acacia are also used on the continent. The trees need to be open-grown individuals, so that the decaying wood maintains a suitable temperature and

Table 1: Index of Ecological Continuity for sites within South West England

| **Site name** | **Old County** | **Index** |
|---|---|---|
| Savernake Forest | Wiltshire | **50** |
| Forest of Dean | Glos | **38** |
| Cirencester Park Woods | Glos | **36** |
| **Ashton Court Park and Leigh Woods** | Somerset | **30** |
| Nettlecombe Park | Somerset | **25** |
| Dunster Castle Park | Somerset | **21** |
| Lydney Deer Park | Glos | **20** |
| Forthampton Oaks | Glos | **18** |
| Crickley Hill | Glos | **18** |
| Devenish Reserve | Wiltshire | **18** |
| Horner Woods complex | Somerset | **18** |
| Sherborne Park | Glos | **17** |
| Whitcliffe Park, Berkeley | Glos | **16** |
| Queenswood Farm | Glos | **16** |
| Cotswold Commons and Beechwoods NNR | Glos | **16** |
| Chedworth Woods | Glos | **16** |

humidity. The requirement for open grown trees explains why the species is better known from orchard trees within its old forest strongholds of the Dean and Wyre. The adult beetles fly on calm, humid, warm and sunny days and are attracted to blossom, favouring white or pale colours such as Hogweed and Elder. Like the stag beetle, it is a speciality of relict old forest areas in the lower Thames, Severn and Solent Basins.

## National Context

Although not as species-rich as the south and east of England, the Bristol area is still an important area nationally for wood decay fauna. It is of particular significance for species on the western edge of their European range – there are notably few localities further into the south-west peninsula for any of the species detailed above. There are even fewer localities with as rich a fauna.

With Ashton Court and Leigh Woods being historically part of the same series of ancient trees it makes good sense from a national viewpoint to group them as one site. When this is done the beetle fauna is demonstrated to be of national significance to their conservation. Alexander (1988) and Harding and Alexander (1994) have developed an Index of Ecological Continuity for the comparative assessment of sites and the Ashton Court/Leigh Woods complex presently has an Index of 30. An Index of 25 or more is currently considered to be the threshold for national importance. Table 1 lists all of the sites in the Government Region of south-west England that currently have an Index of more than 15. This shows that not only is Ashton Court and Leigh Woods of national importance but that they are also the fourth top sites in the South West.

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# WOOD DECAYING MACROMYCETES ON VETERAN TREES IN AVON

Justin Smith

*Veteran trees such as Oak, Beech, Yew, Lime and the non-native Chestnuts, provide important habitats for fungi. These consist of a range of Agarics, Polypores and Ascomycetes, many common, but others are so restricted in their distribution that they justify their own Biodiversity Action Plans.*

## Veteran Trees and their Importance to Fungi

Woodlands, in which 95% of forest energy is to be found in living and dead wood, provide an important nutrient source for many fungi. A single 500-year-old veteran Oak can provide a broad range of microhabitats such as leaf litter, standing dead wood, fallen branches, crown twigs, roots etc that many species occupy as niches. Other species may well be mycorrhizal with that veteran tree, forming a symbiotic relationship between fungal mycelium and the tree's roots.

Fungi are critical in the ecology of almost all wildlife associated with veteran trees and to some extent in the health of the trees themselves. Some of these fungi are now rare and restricted to only the oldest trees. These fungi cause tissues within the trees to decay, rotting out the heartwood and leaving the tree hollow and pitted with holes. But this is all part of the natural process and not necessarily a sign of ill health, as often supposedly damaging species were present as far back as records began with little sign of change in the vigour of the host tree.

Countless species are found on material on and around veteran trees, but this short review concerns those most likely to be encountered on sites with ancient Oaks and Limes, etc, such as Ashton Court and Leigh Woods.

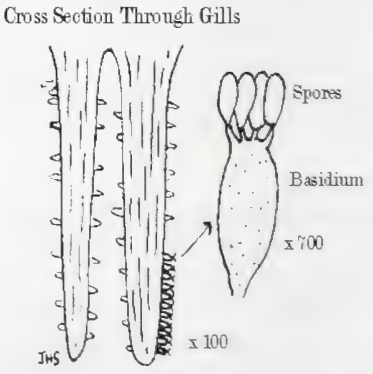



Figure 1a

## Classification

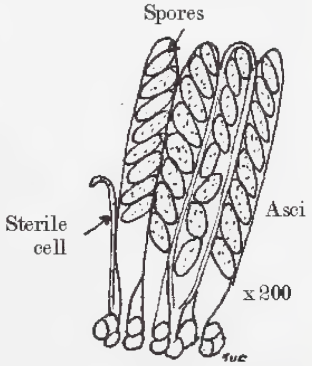
The majority of larger fungi occurring on wood belong to the Basidiomycetes. This large class is typified by the production of spores, usually in groups of 2 or 4, on basidia, produced on gills, in pores or other surfaces (Fig 1a). Basidiomycetes include all Agarics (mushrooms and toadstools), Polypores

(bracket and resupinate, 'upside down' fungi, which are thin sprawling crustose basidiomycetes) and Gasteromycetes (puff balls, earth stars, bird's nest fungi and stinkhorns), but also often confusingly for non-mycologists, micro fungi such as rusts and smuts. A lesser volume of species belongs to the Ascomycetes or 'flask fungi' which will be afforded a minor mention here. These produce their spores internally, usually in groups of 8, in club-shaped structures called asci (Fig 1b). Wood dwelling Ascomycetes usually require a microscope for their correct identification, though a number of distinct species can be named macroscopically.

## Ecology

Wood dwelling macro fungi are either saprophytic, i.e. feeding on dead plant material, or parasitic, feeding on living material. Parasitic species may be weakly parasitic and hence mostly saprophytic, or act as obligate parasites; parasitism is an essential part of that species' life cycle.

Fig 1b Typical asci in Ascomycetes




Both types form part of a decay cycle; different fungi colonise at different stages and once their respective life cycles are completed, the final breakdown is undertaken by insects and nematodes. For example, a newly felled oak, 3 months after felling or in the following autumn will develop large colonies of the brownish-black Ascomycete *Bulgaria inquinans* forming 2- 4 cm cushions on the surface bark. A further year after this, the orange brackets of *Stereum hirsutum* and various resupinate (sprawling) or corticoid fungi appear. Finally after 2 – 5 years, gill fungi will appear including *Pluteus, Mycena* and *Psathyrella*, often growing in moss, which now covers the log. Insects and other invertebrates usually move in when much of the lignin and cellulose have been broken down and the wood has lost most of its original strength and structure.

Wood-inhabiting fungi are able to utilise components of wood cell walls as their main source of energy for growth and reproduction. Wood consists mainly of lignin, cellulose and hemicellulose. Wood rotting fungi can be grouped into two categories according to which enzyme systems they produce to break down these constituents. These two groups are referred to as white rot and brown rot fungi.

*White rot fungi* have cellulase and lignase enzyme systems that enable them to degrade *all* components of wood cell walls - lignin, cellulose and hemicellulose.

Wood decayed by white rot fungi tends to lose its strength properties gradually and retains its fibrous structure into the advanced stages. The decayed wood becomes spongy, stringy or laminated and is essentially soft and friable, with much of the original colour being bleached out. The wood is decayed completely so that residues are not stable components of forest soils.

Examples of white rotters include Dryad's saddle (*Polyporus squamosus*) on Ash and Elm, Artist's Fungus (*Ganoderma applanatum*) on Beech, Oak and Chestnut; Turkey Tail (*Trametes / Coriolus versicolor*) on various tree hosts.

*Brown rot fungi* selectively remove cellulose and hemicellulose, but generally leave lignin intact, a more resistant compound. On attack by brown rotters, the wood rapidly shrinks and cracks along the grain, later producing amorphous, crumbly brown cubical chunks, composed almost entirely of modified lignin. Brown rot residues after decay are very stable and so are important organic components of forest soils. Brown rot fungi include Sulphur Polypore (*Laetiporus sulphureus*) on Oak, Chestnut and Yew, Maze Gill (*Daedalea quercina*) on Oak, and Beefsteak Fungus (*Fistulina hepatica*) on Oak and Sweet Chestnut.

Of the bracket fungi in Europe, 25% are brown rotters and are generally associated with conifer and primitive angiosperms (Oak, Beech). However, in the tropics brown rotters number less than 10%, with 79% being made up by white rotters. White rot fungi are considered to be more highly evolved as they degrade both lignin and cellulose. Most tropical species are opportunistic and can grow on a variety of tree species, owing to the sheer diversity of woody hosts, whilst temperate species are primarily host specific.

Agarics (Gill Fungi) can be brown or white rotters: for many it is still unclear. *Ossicaulis / Clitocybe lignatilis*, a creamy white funnel cap, causes brown rot in Beech, Oak, Poplar, Horse Chestnut and Elm. *Lentinus* (*Panus*) *tigrinus*, a scaly capped greyish brown, rather tough species, causes white rot preceded by a brown invasion zone, mainly on Poplar and Willow, but also on Oak. Both species are yet to be found in the Bristol area. Both parasitic and saprophytic fungi can produce brown and white rots.

In most old trees, the trunk wood is divided into two parts, an inner heartwood and an outer sapwood. The sapwood contains living cells and is therefore resistant to the majority of decay fungi. Living sapwood is also very wet. Water-saturated wood, like very dry wood, is prohibitive to rot fungi, which require both moisture and oxygen, the latter unavailable in very wet wood. Two types of fungi commonly occur in these niches: *necrotrophs* feeding on dead heartwood, and *biotrophs* feeding on living sapwood.

Although the inner heartwood is dead, it contains deposits of protective compounds potentially toxic to decay fungi. Despite this, a small number of parasites can invade via wound or broken limbs and produce heart rots in older trees. The end result is a hollow tree.

*Laetiporus sulphureus* and *Fistulina hepatica,* both common in the Bristol area, are the main causes of heartwood decay in large Oaks, ultimately rendering them hollow. Both of these species seem to need a long period of decay before basidiocarps (fruit bodies) are produced, and thus they are invariably seen only on large Oak trees.

Confrontation lines in section of ash log.

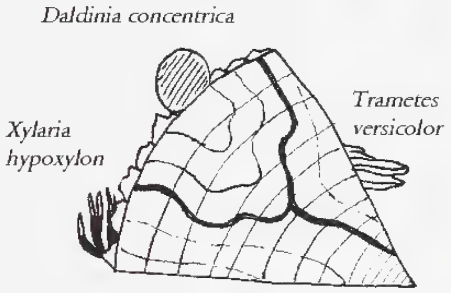



Figure 2

*Butt and root rot fungi* (*Armillaria mellea* and allies) can invade roots and decay the basal stem heartwood in a similar way. This leads to uprooting in strong winds. These same butt and root rots, if higher in the stem (*top rots*), produce breakable limbs that fall away once sufficiently rotted.

Once a tree has died or falls, the outer sapwood succumbs to *saprot* fungi, as it gradually dries out. The sapwood takes only a few years to decay completely (depending of course, on the size of the tree!) whereas the more resistant heartwood can survive for a longer period but eventually it too succumbs.

As mentioned previously, pioneer decayers will be replaced by succeeding communities of fungi. In fact, many gill fungi can only grow on timber that has undergone some degree of decomposition. Most gill fungi are saprophytic, though *Pleurotus* sp., *Panellus* sp and commonly *Armillaria mellea sensu lato* can be weakly to strongly parasitic.

Often, where two or more species or individuals of the same species cohabit on a particular log, *confrontation* or *zone lines* are visible in the sectioned wood as black lines where the hyphae of the two individuals meet. Chemicals released in antagonism to each other form these lines (Fig 2), and wood illustrating this has a particular value to cabinetmakers

The period of growth and longevity are important ecological factors with fungi. All gill fungi and certain

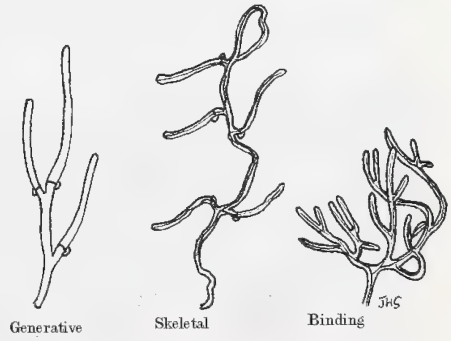



Figure 3 Types of Hyphae

bracket fungi, notably *Laetiporus sulphureus*, *Fistulina hepatica* and *Polyporus squamosus*, use a 'hit and run' technique, where they produce quick growing fleshy to fragile fruit bodies, drop spores quickly (usually within a month of first appearing) and are eaten / decay away readily. It must be emphasised, however, that the fungal mycelium, depending on the availability of nutrients, remains living within the wood. These fleshy fungi are composed primarily of generative hyphae (Fig. 3) only, and are termed monomitic. Some, such as *Lentinus* spp. have skeletal hyphae as well as generative, and are hence termed dimitic. They have a tough, but flexible consistency. Generally gill fungi and fleshy Polypores do not last longer than 6 weeks in the fresh state.

Other fruit bodies of bracket fungi can be perennial, lasting for many years. They often have a layered structure, each layer representing a season of growth (Fig. 4). Their hyphal systems can be dimitic and unlike the gill fungi can be a combination of generative and skeletal, or generative and binding, and are hard, thick and immovable in texture. Bracket fungi can also be trimitic with generative, skeletal, and binding hyphae. Trimitic species are tough but leathery, flexible and very hard to tear. Dimitic brackets include the genera *Ganoderma* and *Fomes*, while trimitic brackets include the common *Pseudotrametes gibbosa* and *Trametes versicolor*.

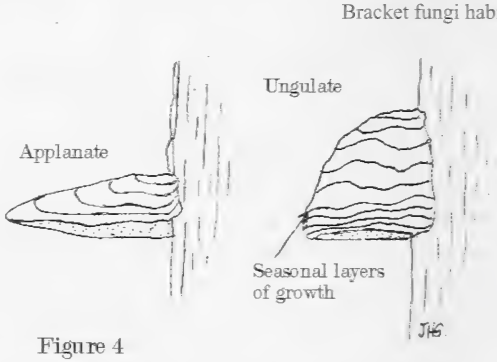



Figure 4

It is important to bear in mind that some tough perennial bracket fungi can be 20 years in age, so when taking a sample for identification, try not to remove the whole fruit body. A small hand saw is useful at this juncture.

## Species in the Bristol area

Presented here is a résumé of species commonly encountered in our area, with a smattering of rarities that have either been recorded previously or await discovery. Oak is by far the most common host.

## Ascomycetes

*Chlorosplenium aeruginascens* **Green Wood Cup** forms greenish blue cups on rotten Oak wood but is usually recorded by the presence of blue-green stained wood on the forest floor; common wherever Oaks occur.

*Xylaria hypoxylon* **Candlesnuff** forms blackish antlers with white tips on a variety of hard and soft wood stumps and logs. It is very common throughout the area.

*Xylaria polymorpha* **Dead Man's Fingers** as the name suggests forms black finger-like projections, white fleshed when fresh, on Ash, Beech, and Horse Chestnut in the Bristol area

*Diatrypella quercina.* A small ascomycete forming blackened cushions less than 5 mm wide bursting through the bark of Oak branches. Very common throughout the area.

*Bulgaria inquinans* forms black 'Pontefract cakes' on newly felled Oak timber. Exceptionally common on felled Oak (native and non-native) in 1997-99 at Goblin Combe and Leigh Woods.

*Rutstroemia firma.* A yellow brown disk fungus with a stalk up to 3 cm long. Usually found in winter in wet areas under large Oaks.

*Dasyscyphus niveus* is a tiny white villose (softly hairy) disk fungus occurring in swarms on the underside of Oak logs. Found abundantly in the area around Tickenham and Weston Big Wood wherever mature Oak occurs.

*Daldinia concentrica* **Crampball** or **King Alfred's Cakes** forms globular purple brown to black fruit bodies up to 10 cm wide on Ash branches throughout the area.

**Basidiomycetes**

*Fistulina hepatica* **Beef-Steak Fungus** (Plate 6b) is a beautiful fleshy annual species resembling uncooked flesh when split open: common on Oak throughout the area but also recorded on Sweet Chestnut and Yew

*Laetiporus sulphureus* **Sulphur Polypore** or **Chicken of the Woods** (Plate 6c) is bright orange yellow when fresh, drying to a more creamy-orange colour and becoming chalky when old. Again found annually on Oak, Sweet Chestnut and Yew, but less common. Recorded from Ashton Court, Burledge Hill and Leigh Woods amongst other sites.

*Ganoderma applanatum, Ganoderma australe* (*G. adspersum*) (Plate 7a). Both perennial species are found frequently on a variety of deciduous hosts such as Oak, Ash, Lime, Beech and Chestnut. They are difficult to distinguish from one another. *Ganoderma applanatum* has thin flesh, and longer tubes. The opposite is true in *G. australe* (see Fig 5). *G. australe* has a uniformly reddish brown flesh (context) while in *G. applanatum* it is

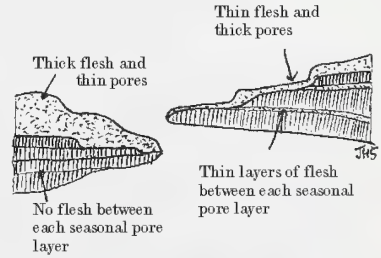

Thin flesh and thick pores
Thick flesh and thin pores
Thin layers of flesh between each seasonal pore layer
No flesh between each seasonal pore layer
JHS
Ganoderma australe
Ganoderma applanatum

Figure 5

purple-brown, and flecked with whitish streaks and patches. Also context appears between each tube layer in *G. applanatum* and not in *G. australe*.

*Ganoderma lucidum* (Plate 7b) is a more unusual member of the Ganodermataceae, again found on Oak (rarely Yew) with a beautiful lacquered maroon cap and, unusually in this genus, possessing a concolorous (similarly coloured) stem. Found in numerous localities within Weston Big Wood near Portishead but probably awaiting discovery elsewhere. This species causes white butt rots in its host.

*Stereum hirsutum, S. gausapatum, S. ochraceoflavum*. These are three commonly occurring leathery resupinate species often forming tiny brackets ranging from orange to grey brown in colour. Occur throughout the area on attached Oak branches.

*Daedalea quercina* **Maze Gill** (Plate 7c) is a beige coloured bracket fungus. again found exclusively on Oaks, but unusually has maze-like pores on the underside. Sporadic in occurrence but found concurrently at Goblin Combe.

*Inonotus dryadeus* **Weeping Polypore** forms large weeping brackets on mature Oaks. Sporadic in occurrence and very local, but has been recorded at Weston Big wood and Leigh Woods (Bob Lewis, pers commun).

*Inonotus hispidus* .(Plate 8a) A beautiful tomentose yellow brown bracket fungus found on mainly on Ash, but also on Oak, whose blackened fruit bodies on the ground below living trees are the only indication of its presence. Both *Inonotus* species are white rotters of heartwood. *I. hispidus* is usually higher up the tree. *I. dryadeus* occurring at the base, causes butt rots. Rather local in this area, but known from Walton Common.

*Calocera cornea* is a common unbranched yellow orange coral fungus occurring in troops on dead wood of Oak, Ash, Lime and Chestnut. Fairly common throughout the area.

*Perenniporia fraxinea* has been recorded on Ash and Oak in Europe. Bob Lewis (pers. comm.) has found this species on Rowan in Henleaze, but the host has since been removed. It awaits rediscovery in Bristol. A good illustration of this scarce species is found in *Fungi of Switzerland*, vol 2 (a snip at £75 per volume!).

*Piptoporus quercinus* (*Buglossoporus pulvinus*) the **Oak Polypore** has not been found as yet in this area. This is a schedule B Biodiversity Action Plan species and may occur where ancient pollard Oaks are present. Unfortunately the only illustration worthy of mention is found in the limited distribution Oct 2001 issue of *Field Mycology Magazine* (see contact in further reading).

*Panellus stipticus* is a bitter tasting stemless gill fungus found in tiers on old Oak wood. Very local and known from only a few sites around Bristol.

*Pleurotus ostreatus* **Oyster Fungus** and related species *P.pulmonarius* and *P. dryinus* are frequently encountered in the normally mycologically barren winter months. Watling (*British Fungus Flora*, vol 6 1989) suggests that they may be

weakly parasitic. They produce lateral stemmed to stem less shell-shaped fruitbodies on a variety of hosts.

*Mycena inclinata*, *M. galericulata.* These are both very common white spored gill fungi found on mossy and mostly rotted Oak logs. Typically they have small conical caps and long stems, and occur in troops on material around veteran trees.

*Pseudotrametes gibbosa* (Plate 8b) is a common, creamy-white, trimitic bracket found throughout the area on Beech, Chestnut and Sycamore stumps.

*Coriolus versicolor* **Turkey Tail** is a very common small multi-colour zoned bracket fungus found in tiers on various broadleaved coniferous trees.

### *Field Mycology Magazine*

This is a recommended publication for all beginners and experienced mycologists. A subscription and review leaflet can be obtained from the author at the above address, as can further information on 'getting to know your fungi'. If readers find puzzling species, the author is happy to receive dried specimens with full description for identification. There is also a local fungus group, the North Somerset and Bristol Fungus Group, details of which can also be obtained from the author at the address below.

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### Further reading

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Courtecuisse, R and Duhem, B. (1995). *Mushrooms and Toadstools of Britain and Europe*; (Collins Field Guide).

Ryvarden L and Gilbertson R. L. (1993*). European Polypores,* vol 1 and 2 *(Fungiflora)*

*Proceedings of the Bristol Naturalists' Society (2001)* **61**:46-47

# NEW AND INTERESTING RECORDS FOR FUNGI, 2001

Justin Smith

A very dry September, but wet October in the Bristol area produced a delayed but rather seasonally confined mycoflora for 2001. There was a definite shortage of agaric genera such as *Lepiota*, *Pluteus*, *Hygrocybe* and *Amanita*, but in October an abundance of genera such as *Entoloma* and *Psathyrella*. Here presented is a selection of potential new or interesting fungal records, with determinations by JHS (Justin Smith), RB (Roy Betts), PA (Pat Andrews), NSBFG (North Somerset and Bristol Fungus Group).

## Basidiomycetes

*Fomitopsis rosea*: according to Kew occurs only on worked timber. More typically known from Scandinavia, but numerous sites in the UK. Discovered by Mike Shipley of NSBFG on a step at Blagdon Pumping Station. (JHS)

*Pulcherriceum caeruleum*: a navy-blue resupinate fungus, normally found on Ash or Hazel, but encountered at Burledge Hill on dead Bramble stems. (JHS)

*Lentinus torulosus*: found on Ash stump at Dolebury Warren (JHS)

*Lachnella alboviolascens:* an overlooked elfcup-like basidiomycete discovered at Littleton Brick Pits, Dowlings Wood (North Somerset) and Dyrham Woods (BANES) on various hardwood twigs (JHS).

*Leccinum brunneogriseolum*: newly separated from *L. scaber*, occurring with Birch at Weston Moor (RB) and Dolebury Warren (JHS).

*Leccinum rigidipes*: another newly created species, this time split from *L. oxydabile*. Recorded under Birch at Ashton Court Meadow (JHS).

*Cortinarius alcalinophilus*: nationally rare, found in calcareous Beechwood, encountered by Connie Neale of NSBFG at Goblin Combe (JHS).

*Cortinarius talus*: another scarce species found with Oak, Hawthorn and Sycamore at Dolebury Warren (JHS)

*Hygrophorus arbustivus*: known at least from the New Forest in the UK but again rare. Burledge Hill (JHS).

*Hygrophoropsis fuscosquamula*: a dark scaly-capped False Chantarelle found in grazed grassland at Clapton Moor (JHS).

*Agaricus impudicus*: an often-overlooked agaric, found at Blagdon Pumping Station (PA)

*Entoloma politoflavipes*: one of the yellowish-brown group of *Entoloma* encountered on the coastal fields of Walton-in-Gordano (RB)

*Psathyrella fulvescens* var *brevicystis* an often overlooked 'little brown job'; discovered in leaf litter in Leigh Woods (RB).

*Russula torulosus*: only recently discovered as British, and associated with *Pinus* at Goblin Combe (JHS)

*Battarraea phalloides*: a very rare RDB species found by Sean Atkins of AWT inside a hedgerow ash, for the second year running, near Itchington in South Gloucestershire (JHS).

## Ascomycetes

*Lopadostoma gastrinum* tiny black ascomycete found on Elm wood at Littleton Brick Pits; common nationally but overlooked (JHS)
*Lasiobolus papillatus*: tiny disc fungus found in swarms on Fox dung; Slader's Leigh, North Somerset (JHS)

Any interesting records or specimens should be sent to Justin Smith at Avon Wildlife Trust, or (records only), to BRERC.

'In Burnham Beeches' wood engraving by Joan Hassall. Reproduced from *Collected Poems* of Andrew Young (1950) Jonathan Cape, by kind permission of Brian North Lee, of Ruth Lowbury and of the publishers

The word 'beech' is closely associated with the word 'book'. In the German language, the word for the tree is 'Die Buche' and the word for book 'Das Buch'. According to *Brewer's Dictionary of Phrase and Fable* (2000), beech bark was used as paper in the Middle Ages. The generic name *Fagus* is derived from the Greek phagein to eat (*Food for Free*: Richard Mabey, 1972), from its edible nuts or 'mast' (the name derived from the German 'Mast', food). - Editor

## THE OAK TREE

Ted Green

*They say an Oak tree grows for 300 years, rests for 300 years, and then spends some 300 years gracefully expiring.*

Like the Englishman before me, who wrote this beautiful saying, I am fascinated with the Oak. The Oak tree has incredible longevity; few other trees can equal it and even fewer surpass it. One could say it is fashioned by nature, in an evolutionary way, to withstand the rigours and passages of time.

An Oak's value and importance to wildlife cannot be overestimated. Entomologists, mycologists and other scientists have long viewed it as a vast living skyscraper, a pulsing ecosystem in its own right. No other tree in Britain has such an enormous biodiversity of associated and dependent organisms, some extremely rare. This includes invisible biodiversity, for the part that fungi play in the life of each oak is fundamental and may aid the tree in its longevity. The endophytic fungi that colonise the living tissue will defend their 'territory' against perceived invaders and therefore can act in an antibiotic manner. The mycorrhizal fungi that colonize and envelop the tree's roots provide an extended food gathering system. Faced with this rich wealth of wildlife, many may ask why individual ancient trees should not be designated Sites of Special Scientific Interest (SSSIs).

In Britain, apart from a small number of landowners and organisations, we take our old Oaks for granted. Since the Dutch elm disease outbreak and the tragic loss of thousands of these very graceful trees from our countryside, we have begun to realise the fragility and frailty of our uniquely British landscape, portrayed in the past by painters such as Turner and Constable. It now appears that the few voices of concern, such as Oliver Rackham's, are being heard. We may have turned the corner and never again will these vast reservoirs of biodiversity be ignored.

Throughout time, our veteran Oaks have watched the ebb and flow of our Nation's fortunes and given our ancestors food, fodder, fuel, shelter, shade, beauty, peace and tranquillity. The more I discover about our Oaks, the more I feel their cultural, aesthetic and wildlife value should be recognised and that these remaining unique relics should command the respect they deserve and assume their rightful place as living monuments in our Nation's heritage.

Reproduced from *Tree News* (Special Edition on Veteran Trees and Ancient Woodlands) Spring 2001, with the permission of the Author and of John May (Editor); The Tree Council, 51 St Catherine Place, London, SW1E 6DY.

*Proceedings of the Bristol Naturalists' Society (2001)* ***61****:49-51*

# ACTION FOR THE BIODIVERSITY OF TREES IN BRISTOL

Sophia Price

*The formation of the Habitat Action Plan for ancient trees, wood pasture and parkland*

Bristol has many ancient woodlands and veteran trees, from the glories of the wood pasture at Ashton Court Estate to individual trees distributed across the city on playing fields, among allotments, in school grounds and hidden within housing developments. The Ashton Court Estate is designated a Site of Special Scientific Interest primarily for the rare invertebrates associated with ancient trees. As part of the Biodiversity Action Plan process for Bristol it was felt that ancient trees and their associated habitats of Wood Pasture and Parkland were a priority. Therefore a group of people came together to formulate a *Habitat Action Plan* for Ancient Trees, Wood Pasture and Parkland. The group consisted of representatives of the Ancient Tree Forum, Avon Wildlife Trust, Bristol Regional Environmental Records Centre (BRERC), English Nature, the Forest of Avon and Tony Titchen, with Treework Environmental Practice of Backwell, led by Bristol City Council. The aim of this Plan is to focus on and encourage *'action to conserve and enhance Ancient Trees and their associated species and habitats in Bristol.*' The introductory part of the plan covers such issues as the current status of ancient tree habitats in Bristol and the ecology and management requirements of and the current factors affecting these habitats in Bristol. It also includes the objectives and targets for these habitats in the *UK and South-West Biodiversity Action Plans*. The key part of the Bristol Plan outlines the main biodiversity objectives and proposed targets for these habitats

## Ancient Tree Photographic Competition

In producing the Action Plan it was agreed that one crucial issue was the need to raise the profile of ancient trees, to help people to understand not only their

wildlife importance but also their cultural and historical significance. To begin to address this, Bristol City Council, in partnership with @Bristol and the Forest of Avon, held an Ancient Tree Photographic Competition, '*Ancient Trees - Images of Bristol*'. This culminated in an exhibition in the Entrance Hall of @Bristol where the photographs were displayed in an eye-catching way and at Ashton Court Visitors Centre, in a weekend of tree-related activities for the general public. The organisers of the competition were particularly pleased that they were able to encourage entries to the competition from schools, youth groups and others that would not normally participate in this type of activity.

### Objectives realised - and to be achieved

Some of the Action Plan objectives have already been achieved. For example, to achieve the Action: '*set up a recording system for Ancient Trees in Bristol, preferably on a GIS base.*' BRERC has already set up such a system and is inputting data about the location of ancient trees in Bristol. To encourage more surveying effort, another Action was to '*design a simple Ancient Tree recording form for Bristol*'. This has been done by BRERC and the forms have been widely distributed. These forms were designed in an imaginative way to attract wider public interest in and recording of ancient trees and even include a length of string with which to measure the tree, and a sticky tab on which to place a leaf from the tree. Readers and others who would like copies should contact BRERC. The BRERC GIS recording system should enable us to get a good picture of the geographical spread of ancient trees across the City and to see if there are areas that have not yet been studied. Not all of the actions have been quite so successful. For example the Action to '*encourage academic research into Ancient Trees, particularly in the Bristol area*' has not been achieved. The author would welcome news of any relevant research in the Bristol area. More activity on the Action '*support and encourage specialist species groups in surveying and monitoring species associated with Ancient Trees*' is needed and in this BNS is planning a major role. More detailed surveys of ancient trees are being encouraged, using the survey method of English Nature.

### Ancient tree survey at Blaise

The City Council commissioned a detailed survey, as part of its Heritage Lottery Funded works, of all the ancient trees and the possible successor trees on the Blaise Castle Estate. There are about 30 ancient trees on the estate, mainly Pedunculate Oak and Holm Oak, and the survey has given some very useful information that will help the long-term management and care of these trees.

### Trees at risk

The Nature Conservation Officer, Bristol City Council would be glad to receive information on the location and condition of ancient trees in Bristol. This would

make significant contributions to the Project, especially information on individual trees that may be at risk from lack of management or commercial development. The Action Plan will be monitored in 2002 and all the relevant data analysed. Biodiversity Action Plans will be produced, focusing on action for the most important species and habitats in Bristol as part of the Bristol Biodiversity Action Project and Local Agenda 21.

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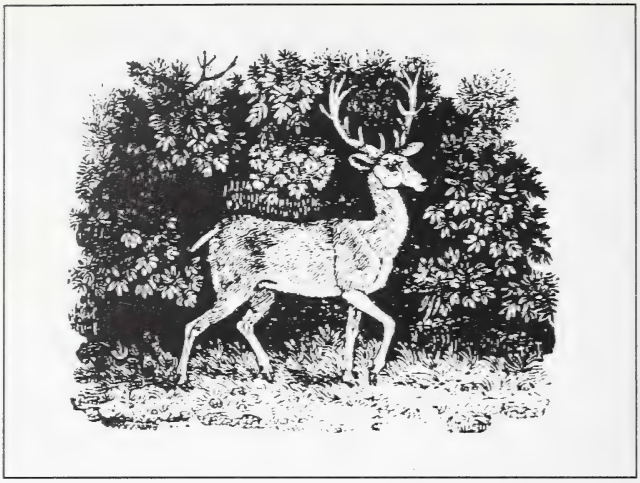
## Brockley Combe

With many a pause and oft reverted eye
I climb the Coomb's ascent: sweet songsters near
Warble in shade their wild-wood melody:
Far off the unvarying Cuckoo soothes my ear
Up scour the startling stragglers of the flock
That on green plots o'er precipices browze:
From the deep fissures of the naked rock
The Yew-tree bursts! Beneath its dark green boughs
(Mid which the May-thorn blends its blossoms white)
Where broad smooth stones jut out in mossy seats,
I rest: - and now have gain'd the topmost site
Ah! what a luxury of landscape meets
My gaze! Proud towers, and Cots more dear to me,
Elm-shadow'd Fields, and prospect-bounding Sea!

*Composed while climbing the left ascent of*
*Brockley Coomb, Somersetshire, May 1795*

Samuel Taylor Coleridge
(reproduced by kind permission of Mrs Joan Coleridge).



Wood engraving by Thomas Bewick (1753-1828)

## The Tortworth Chestnut

The Sweet Chestnut at Tortworth is probably the most remarkable veteran tree in the region (see page 11). There is an interesting account of this tree in '*Meetings with Remarkable Trees*' by Thomas Pakenham (Cassell, 1997). The first printed reference is a map of 1712, and in 1762 it was believed to date from the 9th century, though Pakenham believes it is merely 1100 years old.

The tree is marked on the OS Explorer map 167 at ST 704 933. It is close to Tortworth church and can readily be found by going east from junction 14 of the M5 on to the B4509, or by joining that road from Falfield on the A38, and taking the first turning to the north marked Tortworth which is almost opposite the entrance to Leyhill Arboretum. There is ample parking by the church.

The tree itself does not look impressive from a distance. It is vast and squat, an immeasurable rotting hulk, from which huge branches spring, fall back to earth and root. Thus the great tree itself has become a grove, spreading inexorably outward century by century. Do go to meet this memorable tree. You won't forget it!

Richard Bland

*Proceedings of the Bristol Naturalists' Society (2001)* ***61****:53-57*

# BRISTOL'S TEN LARGEST AND OLDEST TREES

Richard Bland

Trees increase their girth annually throughout their lives. The rate at which they do this is affected by weather conditions from year to year, by the nature of the habitat in which they exist, and by the treatment they receive. The growth rate will be lower in dry conditions, on poor soil, if the tree is surrounded by others, or if its growth is restricted by pruning, pollarding or coppicing. In normal conditions a healthy tree growing in an open situation with a full crown will increase its girth by around 2.6cm a year for around 150 years. Many trees then become stag-headed and shed upper branches, because their root system can no longer support the volume of leaves and transpiration involved, and they tend to become low and squat. They still continue to increase in girth, but at rates that can fall to as little as a centimetre in ten years. Lime trees grow more slowly, Poplars and Sequoias much faster. Occasionally it is possible to check precisely, as memorial trees often have a plaque stating when they were planted. An Oak, planted in 1902 at the top of Bridge Valley Road, is 260 cm in girth today. It follows from this that any tree over 6 m in girth cannot be less than 250 years old, and if it bears evidence of having been pollarded, it must be more.

I describe below ten of the largest and hence oldest trees within the boundaries of the City of Bristol. Only seven are native species, and only three are probably wild in origin as opposed to being planted specimens.

1 *Quercus robur* **Oak**: Bramble Lane ST553752. Age more than 350 years
This is a massive squat veteran, standing in a private garden, completely hollow, and many times pollarded, with very few branches. Its girth is 675cm. It remains exceedingly vigorous, despite having been re-pollarded recently, and it is likely to be in excess of 350 years old, as pollarding will have slowed its growth. The area in which it lies has a number of old pollard Oaks, and in 1650 would have been part of a large estate running down to a tidal creek. It lies on a fairly steep slope, and one reason for the pollarding in the past has probably been to prevent it becoming top heavy and uprooting itself. Because of the slope it cannot readily be seen from the public right of way, and its present owners have had security problems from the long frontage on the path.

2 *Quercus robur* **Oak**: Stoke Hill, ST565755. Age about 300 years
This wonderful tree measures 675cm in girth and stands outside a University hall of residence. It is surrounded by well-tended lawns, and appears never to have been pollarded, though it has shed most of its upper branches. It is not very tall, and it is very easy to pass it by without a second look, for its proportions are so pleasing that it is not until it is approached closely that its massive size

becomes apparent. It cannot be less than 270 years old, and may well date back to 1700, when it would have been a sapling on the edge of the Downs.

3 *Quercus petraea* **Sessile Oak**:. Bramble lane ST553752 Age about 250 years
This is a huge tree, at least 20m high, never pollarded and in full health, in an open situation. Its girth is 640cm, and it is probably 250 years old, dating back to 1750. It stands in Woodland Trust land off Bramble Lane. It is especially remarkable because there are very few Sessile Oaks either in Bristol or in Avon. The new Flora only records it in 7% of the squares in the county, and suggests it is usually associated with ancient woodland. It is so well proportioned that its size is not obvious until it is seen close-to.

4 *Platanus x hispanica* **London Plane**: Brislington Brook, ST620726 Age about 250 years.
The London Plane is a hybrid, and the earliest trees, which still stand, were planted in 1680. They now have a girth of 840cm. The species grows slightly faster than the standard rate. The tree in Brislington is growing beside a small stream, which runs in a slight gorge, and it now entirely fills the valley, but it is more or less invisible from outside, partly because of the declivity in which it lies and partly because of a sharp bend in the river. It is 675cm in girth, quite hollow, and has suffered much recent vandalism, fires being lit in its interior, though this is now prevented by some roughly nailed chicken wire. It is in some danger of collapse, as it is supported by three living legs, one of which is vulnerable. Its girth implies an age of 250 years. Quite who might have planted it alongside the Brook in 1750, when the site was well out in the open country, half a mile from the little village of Brislington, and for what purpose, is mysterious, as the trees were normally planted as striking adornments to a large estate. The oldest Plane trees in Queen's Square date back to 1850. There are Plane trees of similar age close to the Dower House in Stoke Park, outside the City boundary (see 'The Top Ten Tree Hybrids', *Nature in Avon*, 60, 47-66 (2000) by Tony Titchen).

5 *Tilia x vulgaris* **Common Lime**: Kings Weston House, ST540770. Age more than 250 years.
The Common Lime was widely planted from the 17th century in avenues. It is a hybrid between two native species, but may have come into existence on the continent. When Kings Weston house was built by John Vanbrugh in the early 1600s, the grounds were also laid out, and an avenue of Limes leading up to the house from the old road to Shirehampton was created. These are now immense specimens, with huge craggy buttresses at the base, and thickets of growth in the crown. The epicormic growth at the base of these trees has been removed recently enabling them to be measured, and the largest was found to be 500cm

in girth. Limes grow more slowly than the normal rate and they have been pollarded at about 4m, which will have slowed their growth further. They thus probably date from the early 18th century and are thus of the same date as Vanbrugh's Kings Weston House. One or two have collapsed, but at once these sent up new shoots from the old stumps, so that they appear to be quite young specimens, although in fact they are as old as the rest. There are some fifty trees in the avenue, and are all the same clone. It is much the finest avenue in Bristol, and perhaps one of the few Lime avenues of its date in the country.

6 *Castanea sativa* **Sweet Chestnut**: Blaise Castle, ST564787 Age more than 250 years.

The Sweet Chestnut may not be native, but it has certainly been present in this country since the Norman Conquest. This tree stands in an open part of Blaise Castle estate, above the steep-sided valley of the Hen, and is very squat and unassuming, but measures 630cm in girth, which, because it has been heavily pollarded, implies that it is at least 250 years old, and probably at least 50 more. It may have been planted as a specimen at the time Blaise Castle House was built, though, as it stands on its own and appears to be part of no landscaping scheme, it may already have been in existence, and was retained as a fine specimen. Sweet Chestnuts often survived because their timber was quite useless, as most trees acquire a twist in their growth that makes it impossible to cut straight timbers from them. The consequence was that they were either planted for their nuts, or they were coppiced, for the young trees to this day make fine palings, or they were left to grow in size and splendour. There are trees of similar age and size in Ashton Park and Oldbury Court, and there may well have been competition between Bristol gentry as to who had the oldest and finest. The Tortworth Chestnut by Tortworth church (see pages 11 and 52), is the oldest and largest Chestnut in Britain, an extraordinary relic, which is not only the oldest living thing in the region, but older than almost all the buildings that remain from the remote past.

7 *Aesculus hippocastanum* **Horse Chestnut**: Clifton Hill ST574731 Age about 250 years.

This extraordinary tree is 625cm in girth, and must also be in excess of 250 years old. It is divided into two vast trunks near the base, and the second is again subdivided into three a little higher up. The astonishing feature is that one edge of the trunk lies twenty feet above a roadway, bounded by a wall, and that the tree survived when this roadway was cut, probably when the Clifton Hill House University residence was constructed in the 1960s. It is totally healthy, its crown tumbling in vast weeping sheets down to ground level all round, and covering an area some 25 metres in diameter. York Place, an 18th century roadway, stands some ten feet above the tree's base, and this helps to disguise

the size. It belongs to the University, who take excellent care of it. But for such an ancient tree to have survived for so long in such a dense urban situation is astonishing. It is well sheltered from storms, and was once presumably part of the garden of Clifton Hill House, just one of many trees on the steeply wooded slope above Jacobs Wells Road.

8 *Cedrus libani* **Cedar of Lebanon**: Blaise Castle, ST562787. Age about 200 years.
This is an absolutely magnificent specimen, standing alone on the lawns below the house, with a girth of 635cm, and a height of c 25m. Many limbs have been trimmed in the past, either as a result of storm damage, or to prevent it becoming top heavy, and it is another example of a tree so well proportioned that its massive size only becomes apparent up close. Cedars grow faster than the standard rate, and this size implies an age of 200 years, and it is probably one of the few specimens from the late 18th century estate that survives. Many of the Cedars of Lebanon that exist in this country are older and finer than the remnants of the original forests in the Lebanon Mountains. Almost every great estate had its Cedar of Lebanon, and Kings Weston planted a line of them.

9 *Acer pseudoplatanus* **Sycamore**: Blaise castle ST564786. Age about 200 years.
This tree is a mass of trunks, because at some point about a century ago it was coppiced, but was sufficiently vigorous to shoot back. Measuring around all of the trunks gives a girth of 620cm, which is obviously greater than the original tree would have been had it survived intact. However it is likely that the tree is at least two hundred years old. It forms part of a clump of trees that would have been a landscape feature. Ordinary Sycamores are not often planted intentionally, though there are a number of decorative varieties that are, and in northern counties it is widely used as shelter for houses in exposed position. It is adept at planting itself, especially in a situation where a group of more interesting or valuable trees has been planted to form an attractive feature, and the forester fails to act in time to prevent it becoming a major tree in its own right.

10 *Sequoiadendron giganteum* **Wellingtonia**: Trym Valley, Coombe Dingle. ST558778. Age about 80 years.
Wellingtonias were first planted in about 1850, and trees planted then are now within the girth range 650cm and 850cm. They grow in both height and girth at least three times as fast as the standard rate. Their extraordinary thick bark makes them immune to both fire and vandalism, and they seem never to be blown over by storms, though the fact that they are now normally taller than all other trees around makes them vulnerable to lightning strikes. This tree, with a

girth of 605cm is probably the largest in Bristol, though the one in the Lord Mayor's house in Clifton runs it close. Both are probably around a century old, and hence should not really feature in this list at all as there are at least another dozen trees in Bristol that are more than two hundred years old, but the sheer grandeur and vast girth of the Wellingtonias has the consequence that they are impossible to ignore. This tree is in an odd position, beside a shallow concrete pond, but presumably planted close to the stream before the pond was built. It is in a very sheltered position, and its ready access to water may well be the reason why it is larger than any other of its kind in the city. All Wellingtonias are young trees, with potentially a huge lifespan ahead of them, so they are trees whose care and preservation is of great importance for the future appearance of the City. At least one, a young tree near Bridge Valley Road, has recently died, for unknown reasons.

These ten specimens are the finest that I have found within the city boundary, but there are at least 200 more magnificent specimens, almost all on public land, all of them at least 150 years old, and some probably double that. These figures exclude the astonishing collection of veterans in Ashton Park. Bristol has a quite exceptional heritage of magnificent trees that deserve the same sort of protection and respect that we properly give to, say, the Theatre Royal, or the Red Lodge, or any other splendid survivor from a former age, but many of them are largely unrecognised and unprotected. We have a duty to hand to our successors an inheritance at least as magnificent as the one we have received, and should value our trees more highly.

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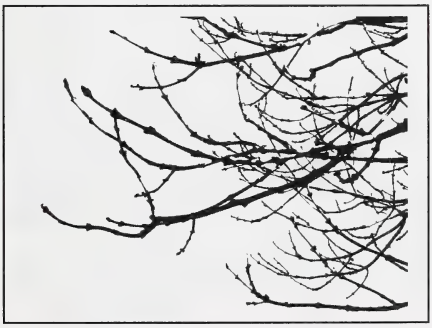


Ash twigs (*Fraxinus excelsior*) photographic silhouette by Richard Bland

*Proceedings of the Bristol Naturalists' Society (2001)* ***61****:58-60*

# THE YEW TREE

Terry Smith

Few of our old churches can be without a Yew tree nearby, possibly planted to epitomise immortality. This tree is very slow growing and lives for a long time, some perhaps dating back several thousand years. The oldest tree in Europe is said to be the Yew at Fortingall in Scotland, which might have been growing for more than three thousand years. Somerset is particularly well endowed with ancient Yews, one of which is depicted in the photograph by Tim Hills on the cover of this journal. This one, which grows in the churchyard at Churchill, is one of Somerset's younger veterans. The oldest is to be found at Ashbrittle, near Wellington.

THE YEW

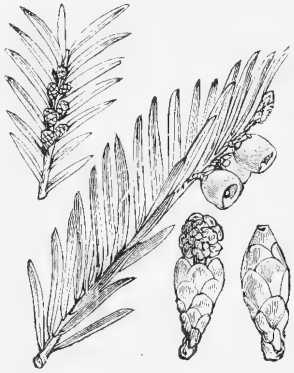
Old warder of these buried bones,
And answering now my random stroke
With fruitful cloud and living smoke,
Dark yew, that graspest at the stones
And dippest toward the dreamless head,
To thee too comes the golden hour
When flower is feeling after flower.

Alfred Lord Tennyson, 1809-1892,
**In Memoriam**

The wood is very hard and dense, and is resistant to decay and insect attack. Some of the ancient artefacts found in peat bogs were made of Yew wood. In the past, the wood has found many uses; in making long bows, in carving, woodturning and for chair arms. The sapwood is yellow and the heartwood is red-brown. The best bows were made from wood taken at the junction of sapwood and heartwood, and contained both. Many of the Yew bows were imported from Europe during the Middle Ages, mainly from Spain and Italy, due to the poorer quality of the wood of the English Yew. Our oldest Yew trees, those over 500 years old, usually become hollow, as may be seen in the churchyard of Portbury church. They may endure for many years in this state, sometimes putting on layers of wood on the outside of the tree, strengthening it further, and sometimes growing from the inside and gradually filling the hollow. The woods around Bristol have many Yew trees, and in some, like those in Bourton Combe, this tree becomes dominant.

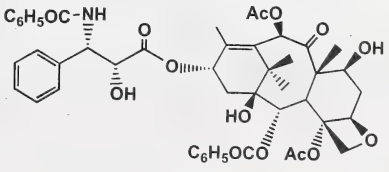
The origin of the scientific name for the Yew genus, *Taxus*, is debatable. Some believe that it is derived from the Latin 'texere' to weave (hence the word textile), from the arrangement of the leaves; others suggest that it is derived from the Greek word toxon (toxin) for poison. Yet others associate it with the word for archery, toxophily.

The Yew is dioecious, having separate male and female trees, only the female tree having the conspicuous soft, bright red 'berries'; the species name for the English Yew *'baccata'* meaning 'having berries'. The correct name for these is 'aril', the soft part of which may be edible. However the seed that it contains is said to be extremely poisonous and should never be eaten. Many birds appear to be unaffected by this toxin, probably because they do not crush the seed, which is in a thick case. Although deer appear to be immune to the cardio-active taxines, cattle may be killed within a few minutes if they eat the leaves, and this may have been another good reason for growing Yew in churchyards where it would have been surrounded by a stock proof fence or wall. As little as 50 g is lethal to humans, slowing the heart rate to 30 beats per minute. Leaves that have been cut and are slightly wilted are thought to be particularly toxic.



Very few insects feed on the Yew, since it contains a range of toxins. However, a small fly (*Taxomyia taxi*) is dependent on the Yew, forming small galls (artichoke galls) at the tips of the growing shoots in some localities, e.g. Brockley Combe and Towerhouse Wood (see page 60).

In 1971 it was shown that an extract from the bark of the North American Yew (*Taxus brevifolia*) contains a cytotoxic drug, which had potential for the treatment of several forms of cancer. It achieves this by blocking the de-polymerisation of tubulin, a protein important in cell division. Dividing cells killed in this way become filled with tubulin fibrils. This therefore has the opposite effect of colchicine, a drug found in the *Colchicum* crocus, which prevents the polymerisation. Unfortunately, each treatment required the bark from an entire tree since the concentration is only 0.01%, and it was realized that the species would soon be made extinct. However, further investigation of the complex chemistry of the alkaloids showed that a precursor (10-deacetylbaccatin) could be easily obtained from the leaves of the English Yew. A company based in Bridport (tel 01398 485693) now offers good prices for Yew tree clippings. This compound has also been found in hazelnuts, though at very low concentrations. The prescription of taxol (right) for ovarian cancer and taxotere for breast cancer is now accepted by the



National Institute for Clinical Excellence, even though the cost is still high and had until recently been subject to 'postcode prescribing'. These cytotoxic compounds are also being used successfully for the treatment of lung cancer.

*I am grateful to Tim Hills for his comments on my draft.*

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Silhouette of Yew leaves from Towerhouse Wood showing Artichoke Galls in the terminal buds caused by *Taxomyia taxi* (Yew Gall Midge).

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# PHENOLOGICAL RECORDS, 1998-2001

Richard Bland

National interest in phenology is growing fast as the use of the internet enables information to be spread quickly as events happen. Locally I have been noting the dates of spring events within the 1-km square ST5673, in Clifton, since 1998, and I publish a selection in the table below. It is worth noting that street lights probably affect spring events, and that all the plants that I record are affected to varying degrees by the presence of these lights. It is important that phenological records compare like with like from year to year, which not only means that comparable records must come from the same geographical site, but in some cases that they should refer to the same individual tree. It was very obvious in 2001, for instance, that Blackthorn came into flower at very different dates depending upon the height above sea-level, the aspect of the plant, and individual differences between bushes. Plant dates are probably more reliable than most animal data, as plants can be more easily watched, though frog spawn is an obvious animal event that can be accurately recorded. The events that any individual can accurately observe in their own area will also vary, and a network of individuals working in a precise way should provide accurate information.

Spring 2001 was unusual because on 1 January, as a result of two very warm weeks at the start of December, some spring events in the garden, such as Forsythia flowering, had already occurred. Bud break in Hawthorn was seen on 9 January, and Celandine was in flower on 11 January, both events a month ahead of 2000. However the very cold spell at the end of February had the consequence that March events were up to two weeks late, though by the end of April some, though not all, events were back to normal. The complexity of the reaction of different species to the same weather events is shown by the fact that Bay flower was first seen on 17 April, sixteen days late, whereas Oak bud break on the same day was three days earlier than 2000.

Autumnal events have usually been less well recorded than spring ones, but also reflect the impact of weather. The long six week dry spell from mid August to the end of September caused many leaves to begin to change colour, or drop without changing. But the heavy rain, and exceptional warmth of October put these changes on hold for many trees. By the end of the third week in November there was a fine display of autumn colour, but rain and gales in the last week left most trees bare by the end of the month.

The table below records the dates of a few specific events for Clifton from 1998-2001. The earliest recorded dates are shown in bold. I have chosen events that are fairly easily recognized, and that refer to wild rather than garden plants, except for Snowdrop. They are arranged in average date order, which is given in the penultimate column. The last column shows the total variation between

years. In some cases this may be a measure of my poor recording, as I have become more accurate as my interest has grown.

| | 1998 | 1999 | 2000 | 2001 | Avg | Variation |
|---|---|---|---|---|---|---|
| Snowdrop flower | 18-Jan | 16-Jan | 23-Jan | **14-Jan** | 17-Jan | 9 |
| Hazel catkins with pollen | | 23-Jan | **12-Jan** | 19-Jan | 18-Jan | 11 |
| Chaffinch full song | | 29-Jan | **24-Jan** | 29-Jan | 27-Jan | 5 |
| Hawthorn bud-break | | 7-Feb | 16-Feb | **9-Jan** | 31-Jan | 38 |
| Celandine flower | 22-Feb | 23-Jan | 14-Feb | **11-Jan** | 2-Feb | 42 |
| Frogspawn | 13-Feb | 6-Feb | **2-Feb** | 3-Feb | 6-Feb | 11 |
| Alexanders flower | 22-Feb | **6-Feb** | 4-Mar | 25-Mar | 28-Feb | 47 |
| Horse Chestnut bud-break | | | **26-Feb** | 7-Mar | 2-Mar | 9 |
| Blackthorn flower | 8-Mar | 27-Feb | **19-Feb** | 1-Apr | 7-Mar | 41 |
| Ash Flower | 15-Mar | 28-Mar | **11-Mar** | 25-Mar | 19-Mar | 17 |
| Wild cherry flower | | | **22-Mar** | 7-Apr | 30-Mar | 16 |
| Bay flower | | **31-Mar** | 1-Apr | 17-Apr | 6-Apr | 17 |
| Honesty flower | | | **31-Mar** | 15-Apr | 7-Apr | 15 |
| Hawthorn flower | 8-Apr | **5-Apr** | 9-Apr | 25-Apr | 11-Apr | 20 |
| Cow Parsley flower | 26-Apr | 8-Apr | **27-Mar** | 18-Apr | 12-Apr | 30 |
| Horse chestnut flower | **28-Mar** | 17-Apr | 21-Apr | 22-Apr | 14-Apr | 25 |
| Sycamore flower | | | **23-Apr** | 11-Apr | 17-Apr | 12 |
| Ash bud-break | 3-May | 24-Apr | 26-Apr | **22-Apr** | 26-Apr | 11 |
| Ox-eye daisy flower | | 2-May | **1-May** | 13-May | 5-May | 12 |
| Elder flower | | **12-May** | 16-May | 27-May | 18-May | 15 |
| | | | | | | |
| Avg of 20 spring events | 14-Mar | **10-Mar** | 14-Mar | 19-Mar | 16-Mar | 9 |
| | | | | | | |
| Blackberry ripe | | | | 7-Jul | | |
| Elderberry ripe | | | | 5-Aug | | |
| Yew berry ripe | | | | 28-Aug | | |
| Ivy flower | | | | 31-Aug | | |
| Whitebeam ripe | | | | 23-Sep | | |
| Gorse flower | | | | 23-Sep | | |
| Ash bare | | | | 11-Nov | | |
| Lime bare | | | | 18-Nov | | |
| Last wasp | | | | 24-Nov | | |
| Beech bare | | | | 25-Nov | | |
| Ivy ripe | | | | 9-Dec | | |
| Oak bare | | | | 9-Dec | | |

The average date variation for all events, omitting events with a variation of more than 30 days, is 14 days. The average date for all 20 spring events is given in the table, and varies by nine days. Spring 2001 was clearly on average about a week later than the previous three years.

The dates of autumnal events are given for future comparison, as this is the first year that I have collected them accurately.

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Wood engraving by Thomas Bewick (1753 – 1828)

## A Veteran Remembers

I live now almost outside time. Once, of course, I grew fast, soughed in the wind, defied the storm, towered in golden glory in autumn frosts, danced with my catkins in the spring. Not now. Now I thicken.
I have become timeless, almost, decades pass me by,
Leaving no obvious mark on my gnarled limbs.
I watch, bewildered, as all around
Things come and go with breathless speed,
Ignoring me, as if, because I change so slowly,
I do not matter. And they are my ephemera.

Death has many forms, drought
In the early day, then storm to topple.
Insects nibble at the edges.
Symbiotic fungi, janus-faced, recycle nutrients, in both directions.
The bright axe leads simply to rebirth and rot eats out the heart, but leaves the living ring.
Squat and hollow, strong, and very much alive,
I watch the saplings fast forward into oblivion.

Only time runs slow; seasons spin by,
Measured out in leaves, and pollen,
Let fly into the careless air to procreate.
To fill the earthworm's tireless maw
And thicken timeless mould.
To keep the badger busy digging
And the Jay planting tomorrow's forest,
As once, unimaginable years ago,
They planted me.

Richard Bland, 2002

Plate 1 a Domesday Oak; Ashton Court (*Neville Fay)*
see pages 8 and 9.

b Veteran trees with views to Bristol beyond; Ashton Court (*Neville Fay*) see page 8.

Plate 2 a Veteran Sweet Chestnut and Oak: Ashton Court (*Neville Fay*) see page 8.

b Veteran pollard Oaks: Clarken Coombe (*Neville Fay*) see pages 8 and 11.

Plate 3a
*Phloiotrya vaudoueri,*
**False darkling beetle**
(*Roger Key, English Nature*) see page 29.

Plate 3b *Prionychus ater,* **Darkling Beetle**
(*Roger Key, English Nature*) see page 29.

Plate 3c
*Pediacus depressus,*
**Flat Bark Beetle**
(*Roger Key, English Nature*) see page 30.

Plate 4a
*Lucanus cervus,* **Stag Beetle** (*Stuart Ball, English Nature*)
see page 31.

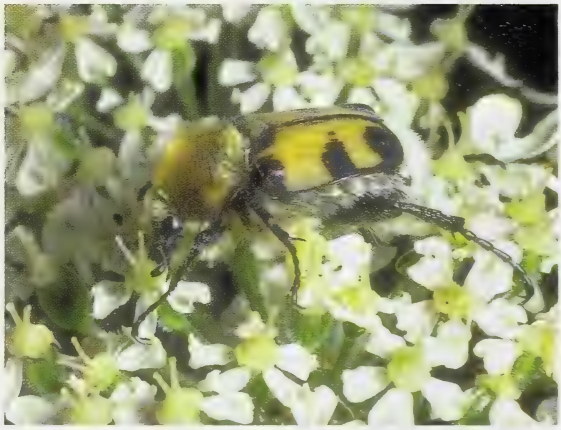

Plate 4b
*Trichius fasciatus,* **Bee Chafer**. (*Roger Key, English Nature*)
see page 31.

Plate 4c
*Ischnomera sanguinicollis,* An **Oedomerid Beetle** (*Roger Key, English Nature*) see page 32.

Plate 5a
*Gnorimus nobilis,*
**Noble Chafer**
(*Roger Key, English Nature*) see page 34.

Plate 5b *Brachypalpus laphriformis*, ♂
Brinkey Wood,
New Forest
(*David Iliff, Cheltenham*)
see page 33.

Plate 5c
*Criorhina asilica,*
Windsor Forest
(*David Iliff, Cheltenham*)
see page 33.

Plate 6a
*Criorhina ranunculi*
♀ (red tailed form),
Nottingham Hill, Glos.
(*David Iliff,*
*Cheltenham*)
see page 33.

Plate 6b
*Fistulina hepatica,*
**Beef Steak Fungus**
Walton Moor
(*Justin Smith, AWT*)
see page 43.

Plate 6c
*Laetiporus sulphureus,*
***Chicken of the Woods***
Brockley Combe
(*Justin Smith, AWT*)
see page 43.

Plate 7a
*Ganoderma adspersum,*
Brockley Combe
(*Justin Smith, AWT*)
see page 43.

Plate 7b
*Ganoderma lucidum,* Weston
Big Wood
(*Justin Smith, AWT*)
see page 44.

Plate 7c
*Daedalea quercina,*
Goblin Combe
(*Justin Smith, AWT*)
see page 44.

Plate 8a
*Inonotus hispidus,*
Walton Common
(*Justin Smith, AWT*)
see page 44.

Plate 8b
*Pseudotrametes gibbosa,*
Pratts Wood (*Justin Smith, AWT*)
see page 45.

Plate 8c
*Pyrrhocoris apterus,*
**Fire-bug** (*Janet Boyd*)
see page 71.

*Proceedings of the Bristol Naturalists' Society (2001)* ***61****:65-68*

# WEATHER REPORT 2001

Richard Bland

In the distant past, weather records were a significant feature of the Proceedings when there was little other information available, and members of the BNS were the official weather recorders for Bristol. More recently there have been comments from John Weeks who maintained regular records at Yatton, and the botanists have used the records from the Long Ashton Research Station that began in 1920. Although there has recently been much comment on possible changes in our weather as a consequence of global warming there has been little attempt to interpret annual weather patterns in the light of long-term data. The weather has a key effect on many features of natural life including migration, nesting success, flowering periods, insect emergence times, the quality and quantity of seed produced by plants, and over-winter survival of birds, mammals and insects. In this report on the weather in 2001 I have attempted to summarise the weather conditions, compare them with long-term averages, and show how they affected some other events. The records used are from Long Ashton Research Station and the averages quoted are from 1920 when their records began.

2001 was an unexceptional year with a late spring because of a cold March, a hot summer, and an early start to autumn because of a long dry spell from mid August to the end of September. Bird migration in spring was late, and many early nests failed, but in the autumn there was a magnificent plum and apple crop, but no beechmast at all. Mean maximum temperature was 13.8°C, the coldest year since 1996, but exactly the same as both the twenty and the eighty-year average figure. (No sign of global warming there.) Rainfall, at 832mm, was the least since 1996, and 78mm below the eighty year average of 910mm, and 128mm below the twenty year average of 950mm. However as the year 2000 had been the wettest in the 20th century with 1250 mm, a drier year was to be expected. The most striking feature of the year was an unusually warm and wet October. The mean maximum temperature was 16.6°C, beaten by six years, the warmest Oct 1921 18.9°C. The rainfall, 135mm, was 14th wettest, well below the record of 223mm in 1967. 55mm of rain on August 9th was the wettest day for the past few years.

## Monthly summary.

For each month the mean daily maximum is given, followed by the 80-year average for the month, followed by the total rainfall and the 80-year average rainfall for the month.

**January**. Temp 6.3°C, (7.5°C), rain 67mm (89mm). There were 9 frost nights, but no snow. The first week was warm, but daily temperatures fell to 2°C on

17th, with E. winds from an anticyclone over the Baltic. After that came complex lows, W. winds and heavy rain from 21st-26th. Partly because of a very warm spell in the first two weeks of December 2000, Snowdrops were out on 14th, and by the end of the month frogs were in the pond, and daffodil stems were 15 cm high.

**February**. Temp 8.8°C, (7.7°C) rain 68mm(65mm), with 9 night frosts. Warm, with low pressure and west winds at the start, but from 12th-26th dominated by high pressure bringing N winds that reduced the daily maximum to 5C by end of month and slowed the onset of spring. Most rain fell on 12th (19mm). Frogspawn appeared on 4th, prunus and daffodil flowers on 5th, but there was no sign of Blackthorn which had been in flower on Feb 19th in 2000.

**March**. Temp 9.0°C, (10.2°C), rain 80mm (60mm). The coldest March since 1996. The first week saw five nights of frost, and ice on ponds by day, the coldest spell of whole winter. Brief S winds on 7th pushed the temperature up to 15°C, but from then on there was a very cool spell, temperatures falling to 4°C on 20th, accompanied by E winds and attempt at snow on 20th, 21st. Forsythia and Ribes were in full flower by the end but some Blackthorn was still not out.

**April** Temp 11.7°C, (12.8°C) rain 92mm (58mm). Five frost nights, the last on the 30th. Temperature on 1st was 16°C, highest of month, but winds from E drove them down to 8°C on 13th, and N winds brought a low of 7°C on 22nd. Only at the end did winds swing to SW and temperature reach 15°C. Wild Cherry was in flower two weeks late from 7th. Oak bud break came early on 17th and Hawthorn flowers from 25th.

**May**. Temp 16.8°C, (16.2°C) rain 30mm (63mm). It was a little warmer and a lot drier than normal, much of the rain falling on 17th. High pressure was dominant, with N and E winds, but warm spells were interspersed with cold on 6th, and 16th-18th. The week of 20th to 26th was exceptionally warm with a maximum of 24°C. Ox-eye daisies were in flower from 12th, Elder on 27th, both about ten days late. There was heavy migration in the first ten days by birds held up in April.

**June**. Temp 19.2°C (19.2°C) rain 34mm (59mm). Another dry month, dominated by high pressure and light winds. There was a very warm spell 22nd to 29th, and maximum of 29°C on 25th, 26th.

**July**. Temp 20.7°C, (20.8°C), rain 95mm (70mm). Distinctly wetter than average, which made up for the previous dry spell. The heaviest rain fell on 13th. At first a series of depressions brought predominantly W winds, but a high

settled over the UK at the end of the month. The first and last weeks were very warm, reaching 30°C, the hottest day of year, on 28th, but there was a cooler spell in between with a minimum of 16°C on 17th. There were almost cloudless days from 14th-16th and 26th-29th.

**August**. Temp 20.4°C, (20.6°C), rain 120mm (84mm). Thursday 9th was the wettest day of the year, when 55mm fell, equalling 30 Oct 2000. The rest of the month was warm and dry, and a spectacular plum crop ripened. Grain was also harvested, and many fields were ploughed at once.

**September**. Temp 17.5°C, (18.1°C), rain 27mm (82mm). A very stable month, dominated by high pressure and N winds, and unusually dry. An excellent apple harvest began to ripen, and there was a good deal of migration in the last two weeks. As a result of the long dry spell, (since 9 Aug.), leaves were falling unturned from the start of the month, and autumn colour appeared early.

**October**. Temp 16.6°C, (14.5°C), rain 135mm (91mm). Nationally it was the warmest October since 1746, though locally it was less unusual. Two days, 20th and 26th, had over 42mm of rain. The combination of warmth and rain halted the onset of autumn. Leaves ceased to turn colour, though they continued to fall. There were no frosts.

**November**. Temp 11.0°C (10.5°C), rain 27mm (90mm). 3 Frosts only, despite domination by high pressure and N winds for first three weeks. Magnificent autumn colour by the end of the third week, but all leaves came off in strong westerlies with rain in the last week. Wasps were still in flight on 25th, next years daffodil spikes could be felt in the grass, and Forsythia flowers were out by the end of the month.

**December** Temp 7.0°C (8.1°C), rain 48mm (91mm). An unusually cold month with 15 frost nights, and even a flurry of snow on night of 28th. Dominated by high pressure and E or SE winds. A second month with rainfall well below average.

Table summarising temperature and rainfall.

| | Avg daily Max °C | Avg 1920-2001 °C | Difference °C | Total rain mm | Avg 1920-2001 mm |
|---|---|---|---|---|---|
| January | 6.3 | 7.6 | -1.3 | 67 | 89 |
| February | 8.8 | 8.7 | 0.1 | 68 | 65 |
| March | 9.0 | 10.3 | -1.3 | 80 | 60 |
| April | 11.7 | 12.3 | -0.6 | 92 | 58 |
| May | 16.8 | 16.2 | 0.6 | 30 | 63 |
| June | 19.2 | 19.0 | 0.2 | 34 | 59 |
| July | 20.7 | 20.8 | -0.1 | 95 | 70 |
| August | 20.4 | 10.8 | 9.6 | 120 | 84 |
| September | 17.5 | 17.6 | -0.1 | 27 | 82 |
| October | 16.6 | 14.2 | 2.4 | 135 | 91 |
| November | 11.0 | 10.7 | 0.3 | 56 | 96 |
| December | 7.0 | 7.9 | -0.9 | 27 | 90 |
| Year | 13.8 | 13.8 | 0.0 | 832 | 910 |

Hawthorn (*Crataegus monogyna*) on Clifton Downs: photographic silhouette by Richard Bland

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# BRISTOL AND DISTRICT INVERTEBRATES REPORT, 2001

Compiled by R. J. Barnett

As with many outdoor activities, much of the early part of the recording season in 2001 was lost due to the national outbreak of foot-and-mouth disease and the consequent 'closure' of footpaths and the general countryside. Despite this, as usual, there have been some very interesting records of insects and invertebrates. The first item of note of the year has to be the Red Admiral seen by Jean Oliver on the 1st January, an individual that undoubtedly had been hibernating. The end of the year saw a Lesser Emperor Dragonfly (a rare immigrant) in the south of the area and the discovery of an introduced species of spider in a garden centre in Bristol. David Gibbs has again added enormously to the knowledge of insects of this part of the country. A selection of his more important discoveries forms the bulk of the species list.

The Avon Butterfly Project had a year of consolidation, gearing up for the intended publication of the 'Butterflies of the Bristol Region'. The Bristol and District Moth Group also had a fairly quiet year, but highlights included the capture of the 4th British specimen of the Egyptian Bollworm coinciding with the appearance of another migrant the same evening, a Bedstraw Hawk-moth.

My thanks go particularly to David Gibbs and Robert Cropper, but also to those who submitted records that do not appear in this report but which help significantly to build up a picture of our invertebrate fauna, and to the Bristol Regional Environmental Records Centre (BRERC) for supplying other data.

Scientific nomenclature follows the names given in Bradley (2000), Chandler (1998), Duff (1993), Fitton (1978), Kirk-Spriggs (1996), Morris (1997) and Potts (1964).

Categories of national rarity :

Red Data Book 1 (RDB1) Endangered; known from 5 or less 10km squares
Red Data Book 2 (RDB2) Vulnerable; species likely to move into RDB1 if causal factors continue
Red Data Book 3 (RDB3) Rare; known from 15 or less 10km squares

Nationally Notable (Na) Known from between 16 to 30 10km squares
Nationally Notable (Nb) Known from 31 to 100 10km squares
Nationally Notable (N) Known from 16 to 100 10 km squares

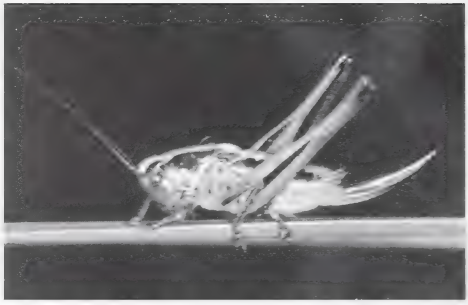
## SPECIES OF NOTE IN 2001

### INSECTA

Orthoptera

*Platycleis albopunctata* (Goeze) **Grey Bush-cricket** A species of coastal areas in southern England and Wales that has been increasing in recent years. Stridulating in good numbers, Brean Down, Somerset ST25 (vc6) 16 September, Robert Cropper.

*Metrioptera brachyptera* (Bog Bush-cricket) New Forest (*Robin Williams*).



*Metrioptera brachyptera* (L.) **Bog Bush-cricket** This specialist of heaths and bogs is still in good numbers in both sites on the peat moors of Somerset: Westhay Moor ST44 25 (vc6) August, and Street Heath ST43 27 August, Robert Cropper.

*Conocephalus discolor* (Thunb.) **Long-winged Cone-head** Spreading northwards in recent years. Good breeding population around overgrown pond, Leechpool, Gloucestershire ST709856 (vc34) 19 August, females and nymphs seen. Single stridulating male at Westerleigh Common, Glos. (vc 34) on 19 August. New 10km records and first for vice-county 34 West Gloucestershire. Robert Cropper.

*Gomphocerippus rufus* (Rufous Grasshopper) Great Breach Wood, Poldens (*Robin Williams*).

*Conocephalus dorsalis* (Latr.) **Short-winged Cone-head** Huge breeding population at Westerleigh Common, Glos. ST6981 – 6982 and ST7081 – 7082 (vc34) 19 August; site straddles two 10km squares, Robert Cropper.

*Gomphocerippus rufus* (L.) **Rufous Grasshopper** A local species of southern England. Good population in limestone grassland and adjoining embankment of old railway line at Midford, Somerset ST764614 (vc 6) 29 July, Robert Cropper.

Odonata

*Anax parthenope* Selys **Lesser Emperor Dragonfly** A rare migrant first recorded in the British Isles in 1996 in Gloucestershire (Brooks, 1997). An adult male was observed at Barrow Gurney ST542673 (vc6) on 25 August by Richard Mielcarek and subsequently also witnessed by Ted Waring, Steve Preddy and others, as well as being photographed.

Hemiptera

*Sehirus luctuosus* (Muls. & Rey) Brislington, Bristol) ST67 (vc10) 10 June. A small colony of this shieldbug noted by Steve Preddy in his garden.

*Pyrrhocoris apterus* (L.) **Fire-bug** This striking red and black bug was found at Cadbury Garden Centre, Congresbury ST4364 (vc6) on 4 May by Janet Boyd (Plate 8c). It was presumably an introduced specimen on imported plants.

*Ledra aurita* (L.) This, the largest 'froghopper' on the British list, is known from just one or two records in the region in recent years. It has a very distinctive shape. Cleeve Hill Centre, Goblin Combe ST469651 (vc6), 10 September, Faith Moulin.

*Oliarus leporinus* (L.) Nb This cixiid leaf hopper is known from Somerset and there are records along the Avon in Bristol. A single individual swept from the cliff base at Sand Point, ST 3265 (vc6) 24 June, David Gibbs.

Lepidoptera (butterflies)

*Thymelicus lineola* (Ochs.) **Essex Skipper** This often over-looked butterfly is still increasing in the district particularly in the east. Lansdown ST7366 (vc6) 2 July to 1 August, over 20 individuals seen on 23 and 31 July. New Bridge Marina, Bath ST716658 (vc6) 14 July. Bannerdown Butterfly Conservation Reserve ST793688 (vc6) 29 July, Alan and Gillian Barrett.

Lepidoptera (macro-moths)

*Synanthedon andrenaeformis* (Lasp.) Nb **Orange-tailed Clearwing** Known in Somerset from very few recent records, centred on the Mendips. One male attracted to pheromone lure at Purn Hill, ST 3357 (vc6) on 3 July, David Gibbs.

*Eriogaster lanestris* (L.) **Na Small Eggar** This district is a stronghold for this rare moth. The larval webs are more often found than the adult but in this case an imago came to light at Pilning, S. Glos ST556850 (vc34) on 31 March, as recorded by John Martin.

*Hyles gallii* (Rott.) **Bedstraw Hawk-moth** A rare migrant to the area, one came to a moth trap at Tickenham ST442724 (vc6) 27 July, John Martin.

*Eilema sororcula* (Hufn.) **Orange Footman** Over 30 examples of this striking orange moth with jet black legs were noted at the Bristol and District Moth Group meeting at Brown's Folly, Bath ST797664 (vc6) on 25 May by John Aldridge, Mike Bailey, Alan Shearman and Darrel Watts.

*Earias insulana* (Boisd.) **Egyptian Bollworm** This very rare migrant has only been recorded on three other occasions in the British Isles and is the first record for this area. Although it is possible that such a moth could arrive through assisted means to Avonmouth Docks, the fact that a Bedstraw Hawk-moth was recorded the same night within a few miles suggests it was probably a true migrant. Stoke Bishop, Bristol ST5576 (vc34) 27 July, Martin Evans.

Lepidoptera (micro-moths)

*Glyphipterix forsterella* (Fabr.) A very local species but perhaps overlooked. The capture of a specimen at Chittening Wharf ST58 (vc34) in June by Rich Andrews was probably the first for the district.

*Ypsolopha mucronella* (Scop.) A rather elongate micro-moth in appearance, whose larvae feed on spindle. An imago at light on 22 March at Timsbury ST6558 (vc6) by Mike Bailey is probably only the fourth sighting in the 'Avon' area in the last 20 years.

*Acrolepiopsis assectella* (Zell.) **Leek Moth** This species was found on at least two occasions during 2001, at Hengrove Park ST56 (vc6) and in Whitchurch ST6067 (vc6) both found in July by Rich Andrews.

*Tachystola acroxantha* (Meyr.) This is an Australian species associated with *Eucalyptus*. It was first recorded from the British Isles in the 1920s in Devon. In the last 20 years the species has been spreading, recorded in the early 1980s in Weston-super-Mare by Martin Evans for example. Andy Pym discovered a specimen in his Filton garden ST6179 (vc34) on 29 July.

*Calamatropha paludella* (Hb.) A pyralid moth which appears to be spreading within the district. One recorded by Mike Bailey at Chew Valley Lake ST5658 (vc6) on 28 July.

*Palpita vitrealis* (Rossi) A rare migrant with pale white wings. One was recorded by Rich Andrews in his Whitchurch garden ST6067 (vc6) on 28 July. Over 100 different species were caught that night.

*Neophopterix angustella* (Hb.) Although not quite a first record for vc6, a moth in Rich Andrews' garden in Whitchurch ST6067 on 21 August was the first local record.

Coleoptera (beetles)

*Badister unipustulatus* Bonelli Nb An attractive black and reddish ground beetle, known in Gloucestershire from a few records in the Cotswolds and the Severn Vale (Atty, 1983; Luff, 1998). One swept at Avonmouth Sewage Farm, ST 5379 (vc34) on 29 May, David Gibbs.

*Meligethes nanus* Erich. RDBI This tiny black pollen beetle was last recorded in Britain from Freshwater, Isle of Wight in 1951. There are no previous Somerset records (Hyman, 1994). Numerous individuals found in *Marrubium* flowers on Wavering Down, ST 4055 (vc6) on 15 July, David Gibbs.

*Meligethes solidus* (Kugelann) N A small, all black, pollen beetle known in Somerset from three records, the last in 1986 from Sandford Hill (Duff, 1993). A few individuals found in *Helianthemum* flowers in Cheddar Gorge, ST 4754 (vc6) on 19 July, David Gibbs.

*Adonia variegata* (Goeze) Nb **Adonis Ladybird** First recorded in Gloucestershire in 1975; there have been about 4 records since (Atty, 1983); it is no more common in Somerset with just two records, both of them on the coast (Duff, 1993). One was reported from Bristol (vc34) in 1987 (Barnett, 1991). Several noted at Avonmouth Sewage Farm, ST 5379 (vc34) 26 August, David Gibbs.

*Stenostola dubia* (Laich.) Nb This distinctive greenish-black long-horn beetle is very rare in Somerset, with the only previous record from Leigh Woods in 1990 (Duff, 1993). A single individual taken at light at Weston Big Wood, ST 4574 (vc6) 25 May, David Gibbs.

*Cryptocephalus bilineatus* (L.) Nb This leaf-beetle is black with a conspicuous yellow stripe on each elytron. In Somerset it is very local and known only from the Polden Hills with only one other recent record (Duff, 1993). A single individual swept from very short grassland at Collard Hill, a new Somerset Wildlife Trust reserve on the Poldens, ST 4834 (vc6) 26 July, David Gibbs.

*Calomicrus circumfusus* (Marsh.) Nb A black and yellow leaf beetle known in Somerset from three locality records, only one in vc6 and that in 1908-15 (Duff, 1993). One beaten from *Ulex* on Crook Peak, ST 3855 (vc6) 15 July, David Gibbs.

*Phyllotreta aerea* Allard Nb A small black leaf beetle that has been recorded near Stroud, Glos. in 1919 (Atty, 1983) and there is a single record in Somerset, Frome 1942 (Duff, 1993). One taken at Avonmouth Sewage Farm, ST 5379 (vc34) 5 July (det. M. Cox), David Gibbs.

*Polydrusus splendidus* (Herbst) Na This brilliant green leaf-weevil is known in this region from just two previous records, one from south Somerset and one on the Somerset Levels (Duff, 1993). One found at Tickenham Hill, ST 4472 (vc6) 26 June, David Gibbs.

*Rhinocyllus conicus* (Froel.) Na This weevil was first recorded in Somerset near Pawlett in 2000 and this year colonies were located at Purn Hill, ST 3357 (vc6), 24 May, Burledge Hill, ST 5959 (vc6) 23 June, Cross Plain ST 4155 (vc6) on 15 July, Walton Hill, ST 4634 (vc6) 20 June where it was still present on 26 July on which date it was also found on Collard Hill, ST 4834 (vc6) David Gibbs.

Hymenoptera (bees, wasps and ants)

*Cleptes semiauratus* (L.) Nb This attractive metallic cuckoo wasp is known locally from an old, undated record by Wotton where it was "common in

gardens" (Perkins, 1924). One taken from an alder leaf at Avonmouth Sewage Farm, ST 5379 (vc34) 5 July, David Gibbs.

*Priocnemis hyalinata* (Fabr.) Nb There do not appear to be any published Somerset records of this red and black spider-hunting wasp (Perkins, 1924). A single individual taken in Cheddar Gorge, ST 4754 (vc6) 19 July, David Gibbs.

*Pemphredon morio* Van der Lind. Nb This shiny black sphecid wasp does not appear to have been recorded in Somerset (Perkins, 1924). A single female taken on Collard Hill, ST 4834 (vc6) 26 July, David Gibbs.

*Andrena hattorfiana* (Fabr.) RDB3 This large and impressive shiny black mining-bee has no previous records from either Somerset or Gloucestershire (Edwards, 2001). Females seen on *Knautia* at Tucking Mill, ST 7661 (vc6) 16 July, David Gibbs.

*Lasioglossum puncticollis* (Morawitz) Nb This small shiny black mining bee has not been recorded in Somerset previously. A single female found on Collard Hill, ST 4834 (vc6) 20 June, David Gibbs.

*Sphecodes niger* Sichel RDB3 This small cuckoo bee has not been recorded in the region previously. Taken at Purn Hill, ST 3357 (vc6) 3 July and at Tickenham Hill, ST 4472 (vc6) 30 May and 27 August, David Gibbs.

*Nomada argentata* Herr.-Schaeff. RDB3 This black and red nomad bee is known in Somerset from a single old record (pre 1970) in vc5 but there are no previous records for vc6 (Edwards, 2001). A singleton found in Cheddar Gorge, ST 4754 (vc6) 9 July, David Gibbs.

Diptera (flies)

*Atypophthalmus inustus* (Meig.) N This small cranefly has no published records for Somerset (Audcent, 1948) and it is unrecorded in Gloucestershire (Alexander, 1999) so it appears to be very rare in the region. Found in Folly Wood ST 6060 , (vc6) 25 July, David Gibbs.

*Stratiomys potamidae* (**Soldier fly**) Westhay Moor, Somerset Levels (*Robin Williams*).

*Macrocera longibrachiata* Land. RDB1 This large and distinctive fungus gnat was known as British from a single male collected at Clovelly, North Devon in 1927 (Chandler, pers. comm. to DG). This then is the second British record and the first for Somerset. A single male swept at Weston Big Wood, ST 4574 (vc6) 1 September (det. confirmed by Peter Chandler), David Gibbs.

*Rymosia signatipes* (van der Wulp) N A small yellowish brown fungus gnat known in Somerset from a few sites including Coxley and Cheddar Woods. One swept at Weston Big Wood, ST 4574 (vc6) 1 September (det. Peter Chandler), David Gibbs.

*Beris fuscipes* Meig. N **Short-horned Black Legionnaire** Known in the region from an old record near Bristol (Drake, 1991). One male beaten from overhanging foliage at Slader's Leigh ST 4256 (vc6) 11 July, David Gibbs

*Stratiomys potamida* Meig. N In its black and bright yellow livery this is one of the more striking soldierflies. In Somerset it is well distributed in the Levels but there are few records north of the Mendips (Audcent, 1948; Drake, 1991; Barnett, 1999). A single female found on hogweed flowers at Burledge Hill, ST 5959 (vc6) 23 June, David Gibbs.

*Bombylius canescens* Mik. Nb **Western Bee-fly** Now probably extinct in Gloucestershire (Alexander, 1999) and in Somerset all recent records are from the Mendips (*e.g.* Barnett, 1999). Historically there were several records north of the Mendips including Tickenham in 1920 (Audcent, 1948). One male seen at Tickenham Hill, ST 4472 (vc6) 30 May and one female watched ovipositing over patches of bare soil here on 26 June, David Gibbs.

*Ogcodes gibbosus* (L.) N **Smart-banded Hunchback** Appears to be known in Somerset from just one previous record, also close to the Poldens (Drake, 1991). Singletons found in tall grassland at Ivy Thorn, (vc6) ST 4734 20 June and 26 July, David Gibbs.

*Choerades marginatus* (L.) N **Golden-haired Robberfly** Known from 3 to 4 records each in Somerset and Gloucestershire, most of the Somerset records near the Polden Hills (Drake, 1991; Alexander, 1999). One female found at Tucking Mill, ST 7661 (vc6) 2 July, David Gibbs.

*Orthoceratium lacustre* (Scop.) N This shiny green marsh fly is known to occur along the coast in Somerset, but inland records are very rare anywhere. A single female swept at Purn Hill, ST 3357 (vc6) on 21 August; perhaps a stray from the coast (det. confirmed by Peter Dyte), David Gibbs.

*Xanthandrus comptus* (Harris) N This very striking black and orange hoverfly is known from very few recent records in Somerset (Levy and Levy, 1998). A single male netted hovering over path at Sand Point, ST 3265 (vc6) on 24 June, David Gibbs.

*Volucella inanis* (L.) N This large and striking hoverfly is known in Somerset from three previous records, only one of these in the north of the county, Leigh Woods in 1917 (Levy and Levy, 1998). One male taken at Tickenham Hill, ST 4472 (vc6) 27 August, David Gibbs

*Pipunculus zugmayeriae* Kowarz N This all-dark big-headed fly is known locally from a single old record at Filton (Alexander, 1999). One male swept at Avonmouth Sewage Farm, ST 5379 (vc34) 29 May, David Gibbs

*Cnemacantha muscaria* (Fall.) RDB3 This small black lauxanid fly has no previous records from Somerset or Gloucestershire. One swept from grassland at Tickenham Hill, ST 4472 (vc6) 30 May, David Gibbs

*Homoneura thalhammeri* Papp N This small yellowish fly does not appear to have been recorded in the region in the past but has no doubt been over looked. One male swept at Burledge Hill, ST 5959 (vc6) 23 June, David Gibbs

*Colobaea punctata* (Lund.) N This small snail-killing fly has not previously been recorded in Gloucestershire or the region (Alexander, 1999; Ball and McLean, 1986). Swept from emergent vegetation at Avonmouth Sewage Farm. ST 5379 (vc34) 5 July, David Gibbs.

*Pherbellia dorsata* (Zett.) N Another small snail-killing fly; this one known from a single record in Gloucestershire (Alexander, 1999) but there are several from the Somerset Levels (Ball and McLean, 1986). Swept from marshy vegetation at Avonmouth Sewage Farm, ST 5379 (vc34) 29 May and 5 July, David Gibbs

*Pteromicra glabricula* (Fall.) N This small, yellow-legged, snail-killing fly is known from a single record in Gloucestershire (Alexander, 1999), also from the Somerset Levels (Ball and McLean, 1986). Swept at Avonmouth Sewage Farm. ST 5379 (vc34) 5 July, David Gibbs.

*Chlorops adjunctus* Beck. N One of the numerous black and yellow chloropid flies, this species does not appear to have been recorded in Somerset before. Swept from at Purn Hill, ST 3357 (vc6) 24 May and at Sand Point, ST 3265 (vc6) 20 August (det. confirmed by John Ismay), David Gibbs.

*Fannia atripes* (Stein) RDB2 A small black calypterate fly which was recorded frequently in a suburban garden in Bristol from 1956 to 1985, but this is the first record in Somerset (Falk and Pont, in press). A single female taken at Walton Hill, ST 4634 (vc6) 4 May (det. confirmed by Adrian Pont), David Gibbs.

*Fannia norvegica* Ring. N This shiny black calypterate fly is known from one previous Somerset record, Brown's Folly in 2000 (pers.obs. DG). A single female taken at Burledge Hill, ST 5959 (vc6) 4 August (det. confirmed by Adrian Pont), David Gibbs.

*Hebecnema fumosa* (Meig.) N A blackish-brown muscid fly known in Somerset from a single record from Sharpham in 1929 (Audcent, 1950). Taken at Weston Big Wood, ST 4574 (vc6) 12 July, David Gibbs.

*Exorista tubulosa* Hert. RDB3 This bristly black parasite fly seems not to have been recorded in Somerset previously. One male taken at Tucking Mill, ST 7661 (vc6) 2 July and a single female taken in Cheddar Gorge, ST 4754 (vc6) 19 July, David Gibbs.

*Cistogaster globosa* (Fabr.) RDB2 This attractive little parasitic fly was first recorded in Gloucestershire in 1999 (Alexander, 1999) but there are no

Somerset records. A single male taken on a *Daucus* (Wild Carrot) flower in Cheddar Gorge, ST 4754 (vc6) 19 July, David Gibbs.

ARACHNIDA

Araneae (spiders)

*Uloborus plumipes* Lucas, September, Garaways Garden Centre, Clifton, Bristol ST5774 (vc34). Found by Karl Taylor in numbers, characteristic shape of spider and web noted. Identification by Francis Farr-Cox. First reported in the British Isles from Scunthorpe in the early 1990s. Established in Holland and Belgium in nurseries and garden centers, importations from which are the likely source of this and other occurrences in the UK. Is now probably established.

CRUSTACEA

*Niphargus aquilex* Single specimen of this cave shrimp found in pool, Compton Martin ochre mine, ST5456 (vc6) 7 January by Dave Clarke and Robert Cropper. Known from a few underground sites on Mendip.

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Wood engraving by Thomas Bewick (1753-1828)

*To see a World in a Grain of Sand*
*And a Heaven in a Wild Flower*
*Hold Infinity in the palm of your hand*
*And Eternity in an hour*

William Blake
(1757-1827)
Auguries of Innocence

*Proceedings of the Bristol Naturalists' Society (2001)* ***61****:80-87*

# BRISTOL BOTANY IN 2001

Professor A.J. Willis

After the wettest year in 2000 for more than a century, total annual rainfall in 2001 was 832 mm, about 4% lower than the long-term (1961-1990) average. April, July, August and October were distinctly wet months, whereas May, June, September and December were much drier than normal. There were 162 days with more than 0.2 mm rainfall, compared with 214 days in 2000. Average temperatures for the year were mostly close to normal, the mean maximum temperature being 13.8°C (0.1°C above average) and the mean minimum 6.9°C (0.6°C above average). Although mean maximum temperatures were lower than average in six months of the year (notably in March, April and December), the mean minimum monthly temperature was lower than normal only in December, when there were 12 frosts out of an annual total of 48. October was frost-free with both mean maximum and especially mean minimum temperatures very much higher than normal, making it the warmest October on record for many places in Britain. In the world overall, 2001 is considered to be the second warmest since records began. Sunshine hours were 1710 for the year at Long Ashton Research Station to which all the above meteorological records relate.

Primrose

*Gagea lutea*

Spring flowering times seem to be about a week later than in 2000. On 4 February *Helleborus viridis* **Green Hellebore** was still in bud at Nettlebridge but *Galanthus nivalis* **Snowdrops** were in good flower in Edford Wood. By 11 February *Erophila verna* **Common Whitlowgrass** was beginning to flower on Brean Down and the first *Primula vulgaris* **Primroses** were open at Dulcote. On 18 February *Viola reichenbachiana* **Early Dog-violet** and a few *Ranunculus ficaria* **Lesser Celandine** were open in Cheddar Wood. Also **Green Hellebore** was flowering in several sites, including Ashton Court Park and Towerhouse Wood, Wraxall. **Daffodils** growing wild at

Churchill were decidedly late, being in tight bud on 25 February. Also *Gagea lutea* **Yellow Star-of-Bethlehem** at Stoke St Michael was not at its best until 1 April when 86 blooms were counted. This is the smallest number for seven years. It appears that a good flush of flowering falls into decline over a number of years, this being noticed also at Littleton and Bonnyleigh Woods. In early September eight flowering plants of *Cyperus fuscus* **Brown Galingale** were seen on Walton Moor (all above phenological records RSC).

A review by Dr C.M. Lovatt of *The Flora of the Bristol Region* by I.P. Green *et al.*, published in late 2000, is given in *Watsonia* (2002), Vol. 24, Part 1, pp. 116-117. Here, the lack of historical continuity with White's *Flora of Bristol* is considered a disappointment. As the new Flora records plants 'seen during the last 15 years or so', it does not indicate changes in distribution. Readers could be forgiven if they assume that, for example, the record of *Althaea officinalis* **Marsh-mallow** below Redcliff Bay in 1993 is the first for the site (recorded here in 1970 by C.H. Cummins - see 'Bristol Botany in 1970', p. 16), and also of *Isolepis cernua* **Slender Club-rush** in 1996 and 1997 on Walton Moor where found in 1900 by C. Bucknall and J.W. White. Some statements in the new Flora may be challenged. It appears very doubtful whether *Polygonum oxyspermum* **Ray's Knotgrass** at Sand Bay 'seems to be increasing' as searches by RSC for the plant there have been unsuccessful in 2000 and 2001. The record of *Carex vesicaria* **Bladder-sedge** at West Town attributed to IPG in 1998 should be deleted as Ian Green states that he has never seen this plant at this site. The record made in 1993 by Peter Rooney of *Hornungia petraea* **Hutchinsia** at Uphill has attracted comment, as despite repeated searches by many over the years, the plant has not been seen at this site, the only other record being the very old one made by W. Sole in 1791, its subsequent apparent absence being believed to be because it was probably destroyed by quarrying. An important omission is of *Ophrys insectifera* **Fly Orchid** for the Clifton side of the Avon Gorge where found by P.J.M. Nethercott in 1996 after a lapse of 142 years (see 'Bristol Botany in 1996', p. 47). Other reviews of *The Flora of the Bristol Region* are in the *London Naturalist* (2001), no. 4, p. 158, by Rodney Burton and in *British Wildlife* (2001), vol. 12, no. 4, pp. 298-9, by Peter Marren. Both reviews welcome the treatment of botanically attractive sites, but regret the absence of links with earlier Floras. Despite the restrictions on fieldwork because of limited

*Allium ampeloprasum*

access to the countryside owing to foot-and-mouth disease, a number of interesting plant records have been made. These include *Allium ampeloprasum* var. *ampeloprasum* **Wild Leek**, a second record for vice- county 6; reports of less common species fill some gaps in *The Flora of the Bristol Region*. A substantial spread of *Cochlearia danica* **Danish Scurvy-grass** is evident along the major roads in v.c.6 (RLB) (see p 88 in this volume).

*Blechnum spicant*

Names of contributors of plant records are abbreviated thus: R.L. Bland (RLB), J.F. Burton (JFB), R.S. Cropper (RSC), I.P. Green (IPG), Clare Kitchen (CK), M.A.R. Kitchen (MARK), Faith Moulin (FM), E.G.M. Niblett (EGMN) and S. Preddy (SP).

The area covered by this report is essentially that defined by J.W. White for his *Flora of Bristol* (1912). The eastern boundary is taken as the old boundary of Wiltshire where it meets the old boundaries of both Gloucestershire and Somerset. The southern limit is taken as approximately the course of the River Brue along some of its length. The area comprises the northern part of the Watsonian vice-county of North Somerset (v.c.6) and the southern part of West Gloucestershire (v.c.34). In the following records these parts are designated S and G respectively.

White water-lily

Plant names are in accordance with C. Stace *New Flora of the British Isles*, 2nd edition, 1997.

*Blechnum spicant* (L.) Roth **Hard-fern**. A single plant at edge of pit, where found in 1978, Street Heath, S, RSC.

*Asplenium adiantum-nigrum* L. **Black Spleenwort**. On old railway bridge, Kilmersdon, S, SP.

*Ranunculus circinatus* Sibth. **Fan-leaved Water-crowfoot**. Chilton Moor, S, RSC.

*Nymphaea alba* L. ssp. *alba* **White Water-Lily**. Small pond near shopping centre, Yate, G, MARK & CK.

*Lepidium heterophyllum* Benth. **Smith's Pepperwort**. A few plants in flower and fruit, Westerleigh Common, G, RSC. Also *Centaurium erythraea* Rafn **Common Centaury**.

Sea purslane

*Cochlearia danica* L. - **Danish Scurvy grass**. This plant has spread very considerably along the major road network south-west of Bristol, being present in 2001 in over 70 1-km squares not recorded in *The Flora of the Bristol Region* (2000), and absent from a few squares where previously present, probably because of concreting the central reservation (RLB).

*Stellaria neglecta* Weihe **Greater Chickweed**. Stoke St Michael, S, RSC.

*Minuartia hybrida* (Vill.) Schischk. **Fine-leaved Sandwort**. This endangered plant is responding well to conservation management ('Sandwort Scrapes') at the Railway Sidings, Radstock, S, SP.

*Chenopodium polyspermum* L. **Many-seeded Goosefoot**. In field gateway off Moor Lane, Congresbury, S, FM. Also on Street Heath, S, RSC.

*Atriplex portulacoides* L. **Sea-purslane**. A 9 $m^2$ patch in flower and fruit, lower edge of salt marsh and a 1 $m^2$ flowering patch nearby, at side of rhyne below Cook's Folly Wood, Avon Gorge, Bristol, G, MARK & CK. This is a first record for the Avon Gorge.

*Trifolium medium*

*Frangula alnus* Mill. **Alder Buckthorn**. Westerleigh Common, G, RSC.

*Medicago polymorpha* L. **Toothed Medick**. St Mary's Churchyard, Yatton, S, FM. Also small patch on lawn, Weston-super-Mare, S, RSC.

*Trifolium medium* L. **Zigzag Clover**. Charterhouse, S, RSC.

*T. striatum* L. **Knotted Clover**. In pasture-land, Clutton, S, SP,

*T. fragiferum* L. **Strawberry Clover**. Leechpool, G, RSC. Also *Myosotis laxa* Lehm. **Tufted Forget-me-not** and *Scutellaria galericulata* L. **Skullcap**.

*Rosa canina* L. x *R. tomentosa* Sm. (*R.* x *scabriuscula* Sm.) One bush on bank of River Frome, Iron Acton, G, RSC.

*R. obtusifolia* Desv. **Round-leaved Dog-rose.** One bush in hedge along field border, and also hybrids with *R. stylosa* Desv. and *R. canina* L., Iron Acton, G, RSC.

*R. rubiginosa* L. **Sweet-briar**. One bush in full bloom by road, Catcott Burtle, S, RSC.

*R. micrantha* Borrer ex Sm. **Small-flowered Sweet-briar**. At least two bushes, edge of salt marsh, below the Portway, Avon Gorge, Bristol, G, MARK & CK.

*Epilobium roseum* Schreb. **Pale Willowherb**. Garden casual, Percival Road, Clifton, Bristol, G, RLB. Single plant by footpath, Combe Down, S, RSC.

*Apium graveolens* L. **Wild Celery**. In field ditch, Kenn Moor, S, FM.

*Crithmum maritimum* L. **Rock Samphire**. Two clumps in flower and fruit, sea wall, near mouth of River Brue, West Huntspill, S, RSC.

*Euphorbia lathyris* L. **Caper Spurge**. Garden weed, Brinsea Batch, Congresbury, S, FM. Six fruiting plants on dumped soil in quarry, Dulcote Hill, S, RSC. Also here one plant of *Mentha* x *gracilis* Sole **Bushy Mint**.

*Carpinus betulus* L**. Hornbeam**. Shirehampton, G, RSC.

*Nymphoides peltata* Kuntze **Fringed Water-lily**. In good quantity, small pond near shopping centre, Yate, G, MARK & CK.

*Lithospermum purpurocaeruleum* L. **Purple Gromwell**. Still on Sandford Hill, S, RSC, where fifteen vegetative stems seen.

*Linaria repens* (L.) Mill. **Pale Toadflax**. Kilmersdon, S, SP.

*Veronica scutellata* L. **Marsh Speedwell**. 10 Acre Nature Reserve, Congresbury Moor, S, FM.

*Cruciata laevipes* Opiz **Crosswort**. Lyde Green, G, RSC.

*Viburnum opulus* L. **Guelder-rose**. Westerleigh Common, G, RSC.

*Valerianella locusta* (L.) Laterr. **Common Cornsalad**. Several fruiting plants by level crossing, Iron Acton, G, RSC. A few plants on grassy bank above road, Cheddar Gorge, S, RSC.

*Artemisia absinthium* L**. Wormwood**. Still in large quantity around buildings and approach roads, Weston Lodge, Weston-in-Gordano, S, RSC.

Purple Gromwell

*Centaurea cyanus* L. **Cornflower**. A number of flowering plants on disturbed soil, north bank of Huntspill River, West Huntspill, S, RSC. Also a few plants of *Salvia verbenaca* L. **Wild Clary**.

*Potamogeton crispus* L. **Curled Pondweed**. Westerleigh Common, G, RSC. Also *Typha latifolia* L. **Bulrush**.

*Colchicum autumnale* L. **Meadow Saffron**. A few plants on shady verge of lane, Blackdown, S, RSC.

*Paris quadrifolia* L. **Herb-Paris**. Persistent in Weston Big Wood, S, EGMN.

*Juncus compressus* Jacq. **Round-fruited Rush**. Good fruiting patch on woodland ride, Lower Woods, Wickwar, G, RSC.

*Allium ampeloprasum* L. var. *ampeloprasum* **Wild Leek**. Near Decoypool Drove, off Claverham Drove, Kenn Moor, near Clevedon, S, FM, det. Dr Paul Wilkin, conf. Brian Mathew. This is the second record for v.c. 6, being previously known on Steep Holm.

*Platanthera chlorantha* (Custer) Rchb. **Greater Butterfly-orchid**. Near woodland path, Stony Littleton, S, RSC.

*Isolepis setacea*

*Viburnum opulus*

*Dactylorhiza praetermissa* (Druce) Soó **Southern Marsh-orchid**. After apparently not flowering for several years, there were about two dozen flowering plants in a coastal field adjoining Clevedon Golf Course, S, EGMN.

*Anacamptis pyramidalis* (L.) Rich. **Pyramidal Orchid**. Three spikes in rocky grassland, Sandford Hill, S, RSC. This is a recently colonised site.

*Isolepis setacea* (L.) R. Br. **Bristle Club-rush**. Milepost 31, Strawberry Line LNR, Yatton, S, FM.

*Carex viridula* Michx. ssp. *oedocarpa* (Andersson) B. Schmid **Common Yellow Sedge**. Westerleigh Common, G, RSC.

*C. pseudocyperus* L. **Cyperus Sedge**. One clump, small pond near shopping centre, Yate, G, MARK & CK.

*C. muricata* L. ssp. *lamprocarpa* Celak. **Prickly Sedge**. Pastureland, Clutton, S, SP.

## Aliens

*Azolla filiculoides* Lam. **Water Fern**. A large stand, Cripps River, Gold Corner, Huntspill Moor, S, RSC.

*Melilotus albus* Medik. **White Melilo**t. Millennium Green, Winscombe, S, FM.

*Lathyrus latifolius* L. **Broad-leaved Everlasting-pea**. Sand Point, S, RSC. Also by Yatton Station, S, FM.

*Rosa rugosa* Thunb. ex Murray **Japanese Rose**. A large clump on mobile sand-dune, Berrow, S, RSC.

*Crassula helmsii* (Kirk) Cockayne **New Zealand Pigmyweed**. Abundant, small pond near shopping centre, Yate, G, Pauline Wilson, det. MARK & CK.

*Heracleum mantegazzianum* Sommier & Levier **Giant Hogweed**. Clay Hill and also Crew's Hole, Bristol, G, RLB. Not flowering on 8 May, Wickham Glen, Stapleton, G, MARK & CK.

*Persicaria capitata* (Buch.-Ham. ex D. Don) H. Gross **Pink-headed Knotweed**. Plentiful at base of walls by the New Inn, Backwell, S, IPG.

*Fallopia baldschuanica* (Regel) Holub **Russian-vine**. Waste ground by Yatton Station, S, FM.

*Symphytum orientale* L. **White Comfrey**. Several plants in full flower in early April, hedge bank above the River Trym below the parish church, Westbury-on-Trym, G, JFB.

*Nicandra physalodes* (L.) Gaertn. **Apple-of-Peru**. Garden weed, The Avenue, Yatton, S,FM.

*Datura stramonium* L. **Thorn-apple**. Casual in garden, Percival Road, Clifton, Bristol, G, RLB. Also here *Misopates orontium* (L.) Raf. **Weasel's-snout** and *Chelidonium majus* L. **Greater Celandine**.

*Lamium maculatum* (L.) L. **Spotted Dead-nettle**. Small patch on road verge, Bury Hill, Yate C.P., G, MARK & CK.

*Campanula persicifolia* L. **Peach -leaved Bellflower**. A number of plants growing out of a roadside wall, central Bath, S, Peter MacPherson.

*Campanula portenschlagiana* Schult. **Adria Bellflower** and *C. poscharskyana* Degen **Trailing Bellflower**. Both of these species are often garden escapes, becoming naturalised on walls. Their distribution in Bristol is much under-recorded in *The Flora of the Bristol Region* (2000). A partial survey by RLB of Bristol and immediate surroundings showed the presence of both *C. portenschlagiana* and of *C. poscharskyana* in very many

*Datura stramonium*

1-km squares, additional to those given in the new Flora. MARK & CK report that in older built urban areas *C. portenschlagiana* is very common, but *C. poscharskyana* is less frequent.

*Galinsoga quadriradiata* Ruiz & Pav. **Shaggy-soldier**. A few plants at base of wall, street corner, Chipping Sodbury, G, MARK & CK.

*Helianthus annuus* L. **Sunflower**. On the sand, Sand Bay, S, FM.

*Pilosella aurantiaca* (L.) F.W. Schultz & Sch. Bip. **Fox-and-cubs**. St Mary's Churchyard, Yatton, S, FM.

*Juncus tenuis* Willd. **Slender Rush**. Spreading along track, Charterhouse, S, RSC.

*Allium carinatum* L. **Keeled Garlic**. Beside path, Strawberry Line LNR, Yatton, S, FM.

*Polypogon viridis* (Gouan) Breistr. **Water Bent**. Abundant by the Cornubia public house, Temple Street entrance, Bristol, G, MARK & CK.

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*Acknowledgements: I thank everyone who has supplied plant records and helped with these, especially Helena Crouch, Mr I.P. Green, Mr M.A.R. Kitchen and Mr P.J.M. Nethercott. I am indebted to Dr D.J. Lovell of Long Ashton Research Station for meteorological records.*

The wood engravings are from '*Illustrations of the British Flora*' by W.H. Fitch and W.G. Smith (1897) L. Reeve & Co. London. The older illustrations are taken from *'A Complete Herbal'* by James Newton M.D. dated 1802.

Italian Alder (*Alnus cordata*) catkins; photographic silhouette by Richard Bland

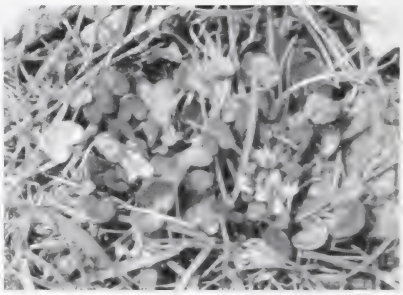
*Proceedings of the Bristol Naturalists' Society (2001)* ***61****:88-89*

# DANISH SCURVYGRASS, *COCHLEARIA DANICA*, IN THE BRISTOL REGION

Richard. Bland

The capacity of plants to respond to micro-habitats created by human activity has been demonstrated in recent years by Danish Scurvygrass, *Cochlearia danica*. It is a saltmarsh annual which has found a niche mostly on the central reservation of motorways where winter salting of the roads kills off other vegetation. Its seeds are perfectly round, and seemingly pre-adapted to fit into tyre treads, and it has spread across the motorway system. It is most obvious when in flower in mid April, and it has died down completely by mid-June.

The rather dramatic distribution map of *C. danica* in the *Flora of the Bristol Region* outlines the pattern of the motorways across the region. It was recorded in 89 1-km squares, only 13 of which were in 'natural' habitat. I was aware of a number of additional sites into which it had expanded, and in 2001 decided to check its present distribution. I did so by driving around many of the major roads of the region when it was in full flower in mid-April, and readily identifiable, even at motorway speeds. On motorways it was usually present on the grassy central reservation over long stretches of the road, and it was relatively easy to plot the 1-km squares in which it occurred. On other roads, where its distribution is more sporadic, I had to stop at intervals to check exactly in which square the species was present, and it is probable that some sites were missed. I surveyed 189 squares, confirming its presence in 35, finding it in 73 new squares, and recording its absence in 81 squares. Six of these were squares on the M32 and M4 where it had been recorded in the *Flora*, but from which it was now apparently absent because the central reservation has been concreted over.



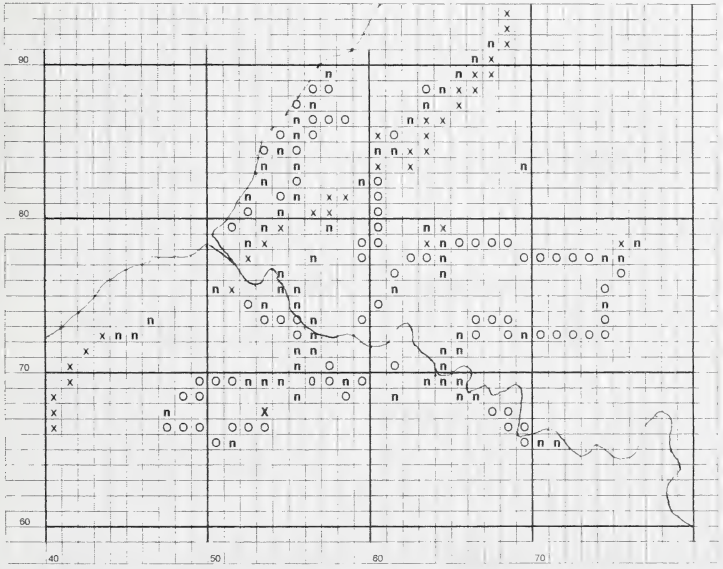
*Cochlearia danica,* **Danish Scurvy Grass** (*Janet Boyd*). The flower is 4-5 mm, white or lilac.

The map below indicates the result. It shows that *C. danica* has gained a foothold on many of the major roads including the A4, A38, A370, A403, and the new A4174. It is almost continuous on the M5, but now absent from much of the M4 and M32, and there are only one or two patches on the approaches to the new Severn Bridge, opened in 1996. I did not check the A37, from which it

has been reported, or the A368, or the Bath area. On motorways it is almost always found on the central reservation, and rarely on the soft verge, probably because the hard shoulder is not salted, and hence the vegetation of the soft verge is too vigorous to enable *C danica* to gain a foothold. It was found along the Portway, usually on patches of soil around trees or lampposts, and even in a small patch of bare soil beside a transport cafe under the Cumberland Basin flyover. It is not common within the city of Bristol, because pavements act in the same way as the hard shoulder, and there is little roadside grass.

For the future I hope to study its spread on the new roads, and to check major roads omitted in 2001. Its spread and vigour may be dependent upon the amount of salting done in any winter, which is related to the number of frost nights and/or threat of snow.

Map of the distribution of *Cochlearia danica* in the Bristol region in 2001.
x = confirmed flora record; n = new record; o = not found



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# BRISTOL MAMMAL REPORT 2001

Compiled by Mary J. Trump and David P. C. Trump

This is the twelfth recent mammal report for Bristol and its surrounding districts. Its intention is to be a wide-ranging review of the records and studies of mammals in and around the Bristol area and to report on significant issues and events affecting British mammals in 2001. The number of one-kilometre squares in which those species were recorded is given in brackets after the scientific name, followed by the number of one-kilometre squares for 2000 and 1999. The former county of Avon covers an area of about 1300 square kilometres, and so the number of 1 km squares for which records have been received gives an indication of the abundance of each species. All grid references are for the 100km grid square ST. Where no figures appear after the species name, no specific records were received (however, there may have been records of that species from another source). The differences between the years is likely to be due to changes in numbers and locations of recorders rather than changes in mammal abundance or distribution.

The year was dominated by foot-and-mouth disease that seriously curtailed access to the countryside. This has resulted in fewer than usual records being received. Landowners however, have reported seeing more wildlife than usual due to the reduction in public access to the countryside.

Highlights included sightings of Chinese Water Deer near Priddy in Somerset in June, and the continued spread of Otters back into the area.

## Reports On Mammals

Insectivora (Hedgehogs, Shrews, and Moles)

*Erinaceus europaeus* **Hedgehog** (38 1-km squares for 2001, 97 for 2000, 52 for 1999). There were road casualty records from 38 1-km squares: (79 in 2000) [Records from: DB, RB, PC, DD, DP, JR, DT, DW]

Six years of data and 391 records of road casualty Hedgehogs show two main peaks (Figure 1): In May when most Hedgehogs have emerged from hibernation and in July/August when the young of the year disperse. Hedgehog road casualties have now been recorded in every month of the year except January and February.

Other Hedgehog records/sightings/observations: -

David Warden reported that he had no Hedgehogs visiting his Bishop Sutton garden this year. He also saw very few road casualties and suggested that the apparent decrease could be linked to the large Badger population locally.

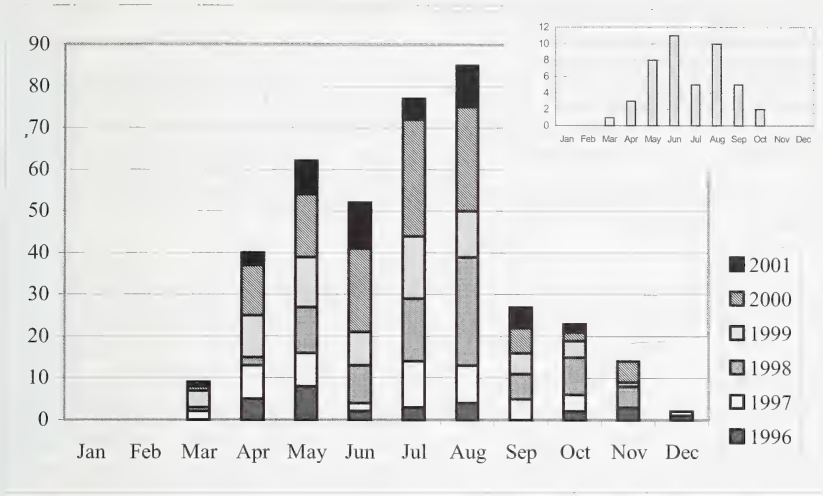


Figure 1. Number of Hedgehog road casualty records per month 1996-2001, and (inset) number of records per month in 2001

David Paine reported finding a Hedgehog dead in a Tortoise box in May and saw two in the same garden in Thornbury (6489) in August.

J.C.Rawlinson reported from a Pilning garden (5585):- one seen feeding on peanuts on 20 April (evidence of feeding through previous two weeks); several further sightings up to 5 May; up to three individuals seen regularly up to 20 May; two, occasionally three seen daily up to 3 June; one dead on road outside garden on 3 June; two, occasionally three, on lawn, two present in the company of Badgers and Foxes on several occasions up to 2 July; four individuals sighted on 4 July; one seen on 15 July and then no further sightings.

*Talpa europea* **Mole** (69,151,78)
Records from 69 1-km squares. All records were of Mole hills.
[Records from: RB, PC, H & SP, JR, AS, DT]

*Sorex araneus* **Common Shrew** (3,1,3)
Two shrews found dead in a West End, Nailsea, garden (killed by a cat?) (4569) in July; several brought home at various times by a cat at Stapleton (6175); two found dead in a Pilning garden, one on 10 April and one on 6 August; one seen crossing road in Winterbourne (6381).
[Records from: JR, AS, DT]

*Neomys fodiens* **Water Shrew** (0,0,2)
No records for the year.

Chiroptera (Bats)

*Rhinolophus ferrumequinum* **Greater Horseshoe Bat** (0,1,8)
No records for the year.

*Rhinolophus hipposideros* **Lesser Horseshoe Bat** (0,3,15)
No records for the year.

*Nyctalus noctula* **Noctule** (3,1,0)
Eight found in a wooden bat box at Blagdon Pumping Station (5060) on 30 March (CK). One heard flying over Brockley Combe (4866) on 23 August (DT&MT). One heard at Abbot's Pool (5373) on 31 August (DT&MT).

*Nyctalus leisleri* **Leisler's Bat** (1,0,0)
A baby Leisler's bat was brought in to the Bat Ecology and Bioacoustics Lab at Bristol University during the summer. It was returned to the roof space of the house in Clifton Park (5773). The Leisler's bat colony in Clifton is thought to have split into several smaller ones (Gareth Jones and Katie Parsons, pers. comm.).

*Myotis daubentoni* **Daubenton's Bat** (1,0,2)
Several seen flying low over the water at Abbot's Pool (5373) on 31 August (DT&MT).

*Myotis mystacinus* **Whiskered Bat** (0,0,1)
No records for the year.

*Myotis nattereri* **Natterer's Bat** (1,1,3)
Two Natterer's bats were caught by the same cat in Downend. The first bat was caught on 27 November and passed to Katie Parsons (Bristol University) via the RSPCA. It was released two days later. Katie Parsons had fitted this bat with a ring and a radio transmitter on 11 October 2000 at Box mine on the eastern side of Bath, over 20 km from where the cat caught it! The same cat caught a second Natterer's bat on 15 January 2002. Sadly it did not survive. Both bats may have come from an old air raid shelter at the bottom of the garden of the Downend house (Katie Parsons pers. comm).

*Pipistrellus pipistrellus* **Common Pipistrelle** and *Pipistrellus pygmaeus* **Soprano Pipistrelle** (4+,3,2)
Up to two seen flying over a Pilning garden (5585) 17, 24, 30 April and 5 October (JR). Several seen and heard at Brockley Combe (4866) on 23 August (DT&MT). See section on **Bats at Chew Valley and Blagdon**.
*Pipistrellus nathusii* **Nathusius' Pipistrelle** (1,0,0)
One record at Herons Green, Chew Valley (5559) on 6 September (PQ).

Bats at Chew Valley and Blagdon

The wooden bat boxes erected by Bristol Water and Avon Bat Group since 1991 were checked on 13 October (DC & DT). Bats, all Pipistrelles, were found in three boxes [three in a west facing box on an oak tree at Chew (5760), two in a northeast facing box together with an old birds nest on an oak tree at Chew (5860) and one in an east facing box on an Oak tree at Blagdon (5160)]. In addition bat droppings were found in a box on the northwest side of the same tree that the single bat was found Blagdon (5160). Nine of the boxes contained birds' nests of varying ages. These were removed to make space for bats. The wooden boxes, most erected in 1991 and 1992, are now reaching the end of their useful lives and of the original 86 erected only 33 are still serviceable as bat boxes.

In March 38 *Schwegler* (woodchip/cement mixture) bat boxes were erected around Blagdon Lake and Pumping Station by Chris Klee. These boxes are relatively light but are very strong and durable with good insulation properties. Two types of box were used, type 1FF – this box has no 'floor' - (8 boxes) and type 2FN (30 boxes) and they were erected in six groups around the lake and the pumping station. At an inspection on 31 October, a single pipistrelle was found in one of the FF boxes and bat droppings were found in a further 23 boxes, an occupancy rate of 63%. Six of the 2FN type boxes contained bird's nests. This occupancy rate is considerably higher than the 3-14% occupancy of the wooden boxes previously reported by DT. The boxes will be checked again in the spring and autumn of 2002. (Chris Klee, pers. comm.).

Bat Studies at Bristol University

A seven year study of the factors affecting the survival of *Rhinolophus ferrumequinum* **Greater Horseshoe Bats** from the maternity roost at Woodchester Park in Gloucestershire has revealed that the more 'out bred' (as opposed to inbred) the individual the greater the rate of survival (Rossiter *et al., 2001*). Physical attributes such as size or weight did not appear to influence survival rates. The authors conclude that protection of mating sites in order to facilitate gene flow and, therefore, out breeding may help to promote population stability and growth.

Lagomorpha (Rabbits and Hares)

*Lepus europaeus* **Brown Hare** (11,34,18)
Records from the following 1-km squares: - Walborough (3156) 13 January one seen swimming towards clump of reeds near bird hide, another seen on path nearby; Stowey (5959) 29 January two seen sunning in a *Brassica* field and 17 December, two seen in a field of winter wheat; A46 (7784) 10 February one seen; Clevedon Moor (4269) 12 April one seen at dusk; Pennsylvania (7474) 3 June one seen in spring cereal field; Clevedon Moor (4270) 22 June one seen after dark; West End, Nailsea (4569) 9 August one seen in pasture field mid morning; Weston Sewage Works (3157) 16 September one seen; Windmill Hill (5074) 13 October one seen in grass field above small reservoir; Marksbury Plain (6661) 17 October one seen dead on road; Folly Farm (6060) 19 December one seen in Dowlings Wood.
[Records from: DB, RB, PC, JM, EN, H&SP, S&JP, DT, DW]

*Oryctolagus cuniculus* **Rabbit** (19,105,30)
[myxomatosis noted in one square].
[Records from: AB, RB, DP, JQ, DT, and DW]

Rodentia (Rats, Mice, Voles and Squirrels)

*Rattus norvegicus* **Brown Rat** (6+, 17,11)
A dead individual found on the garden path (6175) in September; one seen feeding at a nut hanger in garden at Pilning, also seen dead on road (5585); one seen crossing a road in Easter Compton (5682).
[Records from JR, AS]

The inhabitants of Clevedon were confronted by a headline in the *Mercury* of 30 August *'Rat plague threat to beauty spot visitors'*. Rats were reported to be seen regularly in the vicinity of Poet's Walk (3970) and there were concerns expressed about the danger to human health from Weil's disease. A spokesman for North Somerset Council said 'We are baiting in areas where it is safe to do so....we would encourage people not to feed the birds and to take litter away with them'. The same story made the headlines in the *Evening Post* of 7 September *'Help rid us of these rats, rodents scavenge at beauty spot'*.

*'RATS! Rodents invade homes'* (*Mercury* 6 September). The residents of Cobthorn Way, Congresbury (4464) had complained to North Somerset Council about rats coming from an adjoining smallholding. The owner of the small holding was fined £500 (reduced to £100 on appeal) under the Prevention of Damage by Pests Act *(sic)*.'

*'Rat increase on riverbank'* (*Evening Post* 15 August). An *'explosion in the rat population'* along the River Avon at Saltford (6867) was reported by residents, who were advised to contact Bath and North East Somerset Council Pest Control whenever one was seen.

*Rattus rattus* **Black Rat**

A report in the *Times* (24 November) suggested that one of the last colonies of Black Rats in the UK on Lundy may have to be eradicated (along with Brown Rats) in a last ditch attempt to save the rapidly dwindling numbers of breeding Puffins. In 1939 there were 3,500 breeding pairs of Puffins on the island but now there are as few as 10 pairs. As Puffins nest in burrows rats are thought to be the prime suspects in the decline. However the Mammals Trust UK suggest that the Black (or Ship) Rat is innocent and that recent studies suggest that they do not eat eggs. The fate of the rats was to be decided at a meeting of the Lundy management group at the end of the year.

*Sciurus carolinensis* **Grey Squirrel** (50,77,42)

John Burton reported seeing up to six frequenting Sheep Wood and the lawns between Sheep Wood and West Acre Close (5778) between 5 April and 17 May. Up to five (two of them juveniles) were seen regularly between 13 October and 8 November.

As part of his standard weekly bird-recording walk (2 km within old Clifton 5673) Richard Bland has been counting Grey Squirrels. The count for 2001 was 133 squirrels at an hourly rate of 3.4/hr. This compares with 77 at a rate of 1.71/hour in 2000, 78 at a rate of 1.71/hour in 1999 and 58 at a rate of 1.29/hour in 1998.

[Records from: RB, JB, PC, DP, S&JP, JR, BT, DT, DW]

*Arvicola terrestris* **Water Vole** (0,2,0)

No records for the year

The Water Vole is now listed under Schedule 5 of the Wildlife and Countryside Act 1981 and is protected under section 9 parts 4(a) and 4(b). This means it is now an offence to damage, destroy or obstruct access to any structure or place used by Water Voles for shelter or protection or to disturb Water Voles.

Surveys in 1997 and 1998 of Cabot Park, a 183ha agricultural site to the north of Avonmouth (Bennett *et al.,* 2001) showed that there is an estimated population of 200 Water Voles present (1-km squares 5280, 5380, 5480, 5379, 5479). Development proposals for the site include some light industrial units, road and rail links and so there was a need to integrate measures to protect the Water Vole population under this legislation.

Within the Cabot Park site there are many rhynes and subsidiary ditches. Some of these are botanically diverse and rich in invertebrates. The Salt Rhyne/West Rhyne corridor is designated as a Site of Nature Conservation Interest (SNCI). Planning permission for the development was granted in 1999 but there were specific mitigation works required as part of the development.

Some impacts on the Water Voles were unavoidable, such as where the roads cross the rhynes. The number of rhyne crossings was reduced and the culverts were designed so that the water voles could use them. Buffer zones of at least 8m alongside each rhyne had to be provided which was wide enough, as Water Voles generally use only 2m of land on either side of the watercourse. Protective fencing was also erected 10m from the rhyne banks where work was taking place near to Water Vole habitats.

Short-term impacts upon the Water Vole habitat have been unavoidable. A standard method of preventing works from harming the voles was required. A method of displacement and exclusion of Water Voles was developed (Strachan, 1998). This consisted of cutting the bank side vegetation carefully, leaving the area for at least three days to allow the Water Voles to move elsewhere. The site is then fenced and live capture traps are set to ensure that all the voles are out of the area and no voles can get back in. So far this method has been successful in excluding all voles. It is thought to be better than translocation as this can cause much stress to the animals.

A new management agreement has been set up with the Internal Drainage Board that includes sensitive management of the rhynes for water voles. This includes bank side vegetation being cut on one bank only once in any one year, the cut vegetation to be left in heaps or taken off site and this work only to take place in the winter months.

Annual monitoring will take place each spring including metre-by-metre survey of all rhynes known to support or likely to support Water Voles. Monitoring will take place for ten years after the development has been constructed. Preliminary results suggest that there has been little change in the population levels between 1997 and 1999. The newly diverted section of Salt Rhyne is not yet fully colonised although surveys of Water Vole activity in May 2000 revealed holes, latrines and feeding stations.

*Clethrionomys glareolus* **Bank Vole** (1,4,1)
Record from the Grove School, Nailsea (4669) five (one male and four female) in *Longworth* live-capture traps on 3 December (DT & MT).

*Microtus agrestis* **Short-tailed Field Vole** (2,2,2)
One seen attempting to cross a road at Chittening (5382); three adults found under corrugated sheet in a rural cemetery (5585) – five nests located and 15metres of grassed tunnels (both JR).

A study on the use of set-aside by field voles showed how they colonised these areas. Set-aside of either blocks of 5ha or strips 20m wide were sown with *Lolium perenne* Perennial Rye-grass, *Dactylis glomerata* Cocksfoot and *Phleum pratense* Timothy. Vole numbers were monitored for three years. No field voles were found until nine months after the grass was sown and only small numbers were found up to 20 months after sowing. Numbers increased the following year but were still below the national average density of voles in un-grazed grassland. This delay was thought to be due to a lack of a litter layer and a lack of vegetation cover. Studies have shown that voles prefer a high proportion of grass and litter. Annual cutting is beneficial because it provides a dense, flat litter cover under which voles can tunnel. [Vole colonisation of new grassland. Habitat Management News. *British Wildlife* **12** (4):272].

*Micromys minutus* **Harvest Mouse** (1,0,0)
Nest found in brambles at Herriot's Bridge Chew Valley Lake (5758) (DW).

*Muscardinus avellanarius* **Common Dormouse**
No records for the year.

The Great Nut Hunt of 1993, in which 334 Dormouse sites were identified throughout England and Wales, including a number of sites in 'Avon', was repeated during the autumn of 2001 (*Mammals UK* Summer 2001). The results are awaited with interest.

A survey was undertaken by Paul Bright of Royal Holloway College of 100km of hedges in Kent, Sussex, Somerset, Devon and Carmarthenshire to discover the optimum habitat for these animals (Wildlife Reports, British Wildlife 12 (6): 425). Dormice were found in large hedgerows between 3 and 4 metres wide. They were also found in mostly diverse hedgerows that provided a continuous food source. The presence of Dormice indicated a hedgerow several hundred years old. Hedgerows near ancient woodland were also more likely to contain dormice. Most hedgerows however are not suitable for Dormice as they are flailed annually so food such as fruits and nuts cannot form. The presence of Dormice can therefore indicate sustainable hedgerow management.

*Apodemus sylvaticus* **Wood Mouse (Long-tailed Field Mouse)** (7,6,2)
Records from: Towerhouse Wood, Nailsea (4771) three in *Longworth* live-capture traps on 24 February; the Grove School Nailsea (4669) 12 (nine males and three females) in *Longworth* live-capture traps on 3 December; High Kingsdown (5873) up to two individuals seen throughout the year in garden;

Henleaze (5771) one found dead on garden path in November; one brought home (live) by a cat in Stapleton (6175); seen on several occasions in garden in Pilning (5585); one seen crossing road in Severn Beach (5485).
[Records from: S&JP, JR, AS, BT, DT, MT]

*Apodemus flavicollis* **Yellow-Necked Mouse** (0,0,1)
No records for the year.

*Mus domesticus* **House Mouse** (4,3,1)
A record of a dead House Mouse outside the Central Bus Station in Bristol (5873), also from a stock shed in Wickwar (7288), garden shed in Pilning (5585) and the church at Frampton Cotterell (6780).
[Records from JR, MT]

Cetacea (Whales, Dolphins and Porpoises) and Pinnipedia (Seals)

*Halichoerus grypus* **Grey Seal** (0,0,2)
No records this year.

Carnivora (carnivores)

*Mustela vison* **American Mink** (0,3,3)
No records for the year.

The Environment Agency is hoping to create Water Vole strongholds by encouraging some landowners to control Mink. This has already started in one area, and if government funding is available, this project will expand. There is no way that Mink will be eradicated but they need to be controlled if Water Voles are to survive (*BBC Wildlife March 2001).*

*Mustela ermina* **Stoat** (4,10,7)
Records from Brean Down (2859); Walton Moor (4373); Stowey (5960); Long Barrow (7878).
[Records from: PC, S&JP, LR, DW]

*Mustela nivalis* **Weasel** (3,10,3)
Records from Burrington Combe (4858); Clifton Downs (5673); Tockington (6286), Wotton-under-Edge (7493).
[Records from: RB, JR]

*Mustela putorius* **European Polecat** (?,2,1?)

A sighting of two 'glossy black/brown animals with white/cream markings across their faces' in fields near Severn Beach in February by Vic Savery could have been polecats or escaped polecat/ferrets. (via Bristol-Wildlife @yahoogroups.com).

*Lutra lutra* **Otter** (2+,24,1?)
Footprints recorded from Clevedon Moor (4270) in February (MT); spraint found on bank of Land Yeo, Tickenham (4671) in November (MT)

The North Somerset Otter group only managed two full surveys this year – February and November – due to foot-and-mouth restrictions. However since its initial surveys in Spring 2000, results have shown the presence of otters on many North Somerset watercourses. The most successful survey was in February 2001 when 505 of survey sites showed signs of otter activity. The main areas of Otter activity seem to be on the Congresbury Yeo, Kenn Moor and Tickenham Moor. This is exciting work as before the otter group was formed there were few records of otters in North Somerset, with the only otter activity recorded in the vicinity of the Congresbury Yeo. This area is at the northern boundary of otter expansion from the south and so it is an extremely important area to be surveyed in the future (*Spraint* – the newsletter of the North Somerset Otter Group - issues 5 and 6).

Close links are held between the North Somerset and Bristol Avon Otter groups so more joint working is hoped for in the future. The latest news from the Bristol Avon Otter group is that there is activity on the Cam and the Chew. Two cubs were also sighted in early 2001 with their mother who now has a new mate. This suggests that the mother may soon breed. Two students are working with the Bristol Avon Otter group studying habitat quality and spraint analysis (Simon Reece, Bristol Avon Otter Survey).

*Meles meles* **Badger** (42,77,56)
Six years of Badger road casualty figures with 219 records to date show a large peak between March and May (peak breeding season) with a smaller peak in August (dispersal of young) (Figure 2). It is interesting to note the complete lack of road casualty records in December and only three records for November and January. This is the time of year when Badgers are at their least active, with the pregnant females under ground in their setts prior to giving birth to cubs between January and March.

[Records from: DB, RB, JM, JR, TS, DT, MT]

Other records were few and far between:-
Badger diggings recorded in Clifton (5673) in December (RB); new sett digging in Horton (7784) in January (RB); sett and scrapes in a disused railway

embankment at Havyatt Green (4760) in September (DT); Badger sett in riverbank near Tickenham Church (4671) (MT).

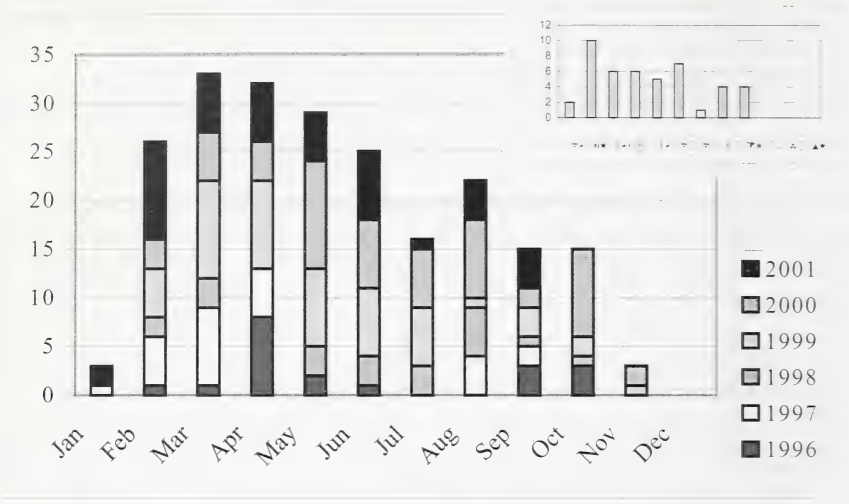


Figure 2. Number of Badger road casualty records in the years 1996 – 2001, and (inset) number of records in 2001.

J C Rawlinson reports from a Pilning garden (5585): - a female seen feeding on peanuts between 21.15 hrs and 22.15 hrs 14 to 21 May; two (adult female? and juvenile) feeding on peanuts on 29 May; four seen in garden (three juveniles and a large male) on 3 June; five seen each evening 7 to 8 June; up to five seen every evening 9 June to 3 July; seen daily up to 8 August, including six on 29 July; three seen feeding on 30 September; one seen at 20.15 hrs on 3 October; three seen feeding on 13 November, not seen after this date. One of the adults was seen feeding at the same tray as a Hedgehog on several occasions. The large male always chased away any Foxes in the garden. The three juveniles always ate at the same tray and ignored the Foxes.

David Davies read in *The Link* (the parish magazine of Abbots Leigh and Leigh Woods) an account from John Sparks about an incident where 'their garden Hedgehog was under attack from a Badger in the early hours of one morning in May. The Badger was shooed off and the Hedgehog was none the worse for wear'.

The *Mercury* of 7 June reported on 'Brock Horror ....a plague of badgers' in the back gardens of West Way, Clevedon (4071). Hundreds of tulips, geraniums

and London prides were reported to have gone missing in the Badger's night-time raids.

Badgers are anti-social yet they live in groups; they forage alone and don't share parenting chores; their body condition deteriorates and reproductive success decreases. Recent research carried out at Wytham Wood, Oxford has suggested that it is their food that keeps Badgers living in groups. Ninety per cent of their food is earthworms. These are found in a patchy distribution, with woodland being especially important, as the ground generally doesn't freeze in winter. It has been found that in places, earthworms are available in such a way that Badgers can feed without competing with each other. The Badger's territory size is limited by the number of earthworm patches and their group size is limited by the number of worms in that territory. This theory may also explain other group-living carnivores such as Foxes (*BBC Wildlife* November 2001).

New research published by the Department for the Environment, Food and Rural Affairs Central Science Laboratory raised questions concerning the government's Badger culling trial. They showed, by computer models, that whilst Badger culling may reduce levels of bovine tuberculosis in Badgers and cattle, this was an average result. They also drew attention to the high costs of the trial. This study backs up other studies that doubt the statistical efficiency of the trial and also it's inability to keep to schedule. The cull has been put on hold because of foot-and-mouth disease and a report from the Select Committee on Agriculture stated that other policy options might be tested outside the culling trial (*BBC Wildlife* June 2001).

*Vulpes vulpes* **Fox** (35,71,27)

Foxes found within the Bristol City boundary were as follows:-

1) One (juvenile?) seen at Avonmouth Sewage Works (5379) at 06.30hrs on 6 June (RB).
2) One seen at Horseshoe Bend, Shirehampton (5476) on 1 September (DB).
3) Up to three (vixen and two cubs?) seen in garden in Arbutus Drive, Coombe Dingle (5577) between 26 October and 2 November (JQ).
4) One seen at Ashton Vale (5670) late evening on 1 March (DM).
5) One seen running across road in Clifton (5672) at 22.45hrs on 22 October (RB).
6) One seen in Percival Road, Clifton (5673) at 15.00hrs on 3 November (RB).
7) One seen at the peregrine watch point Clifton Downs (5674) on 7 May (RB).
8) One seen in grounds of Government Buildings, Westbury-on-Trym (5778) at 13.00hrs on 21 January (DP).
9) One seen on Narroways Millennium Green, St Werburghs (6075) on 9 November – appeared to be free of mange (DB).

10) One, adult in good condition, seen at 09.00hrs at Sheep Wood (5778) on 10 May (JB).

Foxes continue to be a rare sight in Bristol following the outbreak of *Sarcoptes scabiei* sarcoptic mange in the mid 1990s (8 records in 1998, 5 in 1999 and 6 in 2000).

J.C.Rawlinson reports from a Pilning garden (5585):- adult male seen feeding from a peanut station most days from 14 February to 2 March, adult female noted regularly at a feeding tray daily from 13 to 21 May, two adults and three cubs seen each night between 30 May and 8 June, up to eight individuals (seven at any one time) – one adult male, two adult females and five juveniles including a 'runt' seen almost nightly up to 3 July, between three and five individuals visiting regularly up to 8 August, occasional sightings of up to three individuals up to 17 September, occasional visits by an individual up to 25 October, occasional signs of visits (droppings) up to 30 December.

[Records from: DB, RB, PC, DM, JQ, JR, DT, MT, H&SP, DW].

Urban Foxes

Bristol's Foxes have been studied in detail since 1967 (Baker *et al* 2001). In this year the Bristol Naturalists' Society organised its first Fox rally. Members drove around the streets at night and recorded any Foxes seen. This continued every winter until 1973. Meanwhile Stephen Harris (Bristol University) spent three years from 1968 watching and counting the Foxes. Initially Foxes were studied across the city but since 1990 Bristol University have concentrated on Fox populations in 1.5km$^2$ in the north west of Bristol.

A summary of their findings is presented in date order.

1960 - 1990

Fox numbers seemed to be stable during the 1960s and 1970s. Counts showed that there were many social groups (211) containing a total of 716 adults with just under 900 cubs born annually by the late 1970s. There were about 4.1 groups/km$^2$ with an average group size of 3.4 adults. The spring density was 29.5 Foxes/km$^2$. Counts in 1990, however, showed a decline in numbers of 30% with the spring density being 20.7 Foxes/km$^2$.

1990 - Spring 1994

Fox density increased dramatically by 1993 as a result of the formation of two additional groups. The territory was divided and average group size increased. The spring density rose to 64.3 Foxes/km$^2$. During 1994, group size rose again but productivity decrease leading to a spring density of 58.3 Foxes/km$^2$.

Therefore adult density had increased 4.7 times between 1990 and 1994. This increase implied that food availability had changed or there was an abundance of food. Previous studies had shown that 60% of the Foxes' food was scavenged; often from compost heaps, bird tables or rubbish bins. Questionnaires were also sent out to find out how much food was provided by householders specifically for Foxes. About 10% of householders fed Foxes at least once a week and with scavenged food this caused the Foxes' territories to divide to create two new social groups. Householders gave positive feedback about the Foxes and they fed them in increasing amounts in order to see them, and consequently more Foxes remained on their natal territory. Two territories had particularly friendly Foxes that were very trusting and would approach people for food, and more food was then put out for them. This showed that Fox populations could respond rapidly to changes in food availability.

Summer 1994 - Winter 1995

Unfortunately it will never be known how much higher the Fox density could have risen because sarcoptic mange was introduced to Bristol's Fox population. The disease had spread from the south-west of Britain and a juvenile male with the disease entered the Fox population in the summer of 1994. Mange is virulent in Foxes and animals usually die within four to six months of being infected. This led to a crash in Bristol's Fox population and by the autumn of 1995 some of the Fox groups died out completely, neighbouring groups then increasing their territory size. This continued until the winter of 1995 when adult density had declined to 0.9 Foxes/km$^2$. The last two Foxes from the study groups were sadly killed by cars.

Spring 1996 – 2000

The study population had died in two years and it was estimated that over 90% of Foxes in Bristol had died. Mange has continued in the Fox population but at a much lower level. By 2000 30-40% of the Foxes had some signs of the disease. Some recovered from the infection naturally or because they were treated by householders. Densities stayed low at less than 2 Foxes/km$^2$ and it was surprising that the cubs generally dispersed from their natal territories rather than staying and increasing the Fox density, as before the mange outbreak. Territory size is staying constant even though each group does not appear to need such a large area, as food is still easily available.

These long-term changes show how complex the population changes are. It has been shown that social behaviour, i.e. the increased territory size, has controlled the population in Bristol in the late 1990s. It is believed by Bristol University that this population model would also apply to rural Fox populations.

Wilkinson and Smith (2001) sent a questionnaire to 139 councils and 44 local mammal groups requesting data on changes in urban Fox densities between

1987 and 1997. Of the 152 responses received, 41% reported an increase in Fox numbers, 42% - no change, and 7% - a decline. Most of the increases were perceived to be due to increased food availability. Decreases were thought to be due to sarcoptic mange. The models currently used to determine control strategies in the event of a rabies outbreak in Britain depend on having sufficient up to date urban Fox density data. This survey suggests that the urban Fox density data for Britain should be updated regularly. Bristol and Bath were, not surprisingly, two of the five urban areas in England and Wales reporting decreases in Fox densities.

Silver Foxes

There have been several sightings of 'Silver Foxes' in Wiltshire. These Foxes are silvery black in colour with a white tip to the tail, a true melanistic morph of *Vulpes vulpes* the Red Fox. In North America less than 10% of the Red Fox population is 'silver'. The Wiltshire sightings are thought to be escapees from private collections or animal sanctuaries. The 'Silver Fox' was regularly bred on fur farms in the UK but the last of these closed down some 5 years ago and was over 320 km from these latest sightings. (*Mammal News* **125**:6).

Artiodactyla (Deer)

*Cervus elaphus* **Red Deer** (0,1,0)

No records for the year outside deer parks.

*Capreolus capreolus* **Roe Deer** (20+,51,31)

Records of Roe Deer from the following 1-km squares:- 4172, 4273 (five adults seen in the wood behind Walton Manor on 24 February), 4458, 4575, 4671, 4677, 5070, 5169 (five seen together in field), 5270, 5373, 5569, 5670, 5672, 5674 (1 seen swimming across River Avon from Bristol side at 17.55 hrs on 30 April and 09.20 hrs on 18 May – both seen from the Peregrine watch point), 5760, 5860, 6060, 7168, 7774, also from Blagdon Lake and Goblin Combe.

The letters page of the *Mercury* of 19 April included one from a resident of Clevedon who saw a 'small deer about 3 ft tall' in Sunhill Park, Clevedon (4071).

David Warden reports from the Chew Valley area:- At least three regularly seen on Denny Island, Chew Valley Lake (5760) (DW). Twin fawns seen at Villice Bay CVL (DW). A pair seen 'courting' on 2 June. Maximum of seven seen together at any one time.

[Records from: DB, RB, DD, EN, H&SP, S&JP, BT, DT, MT, DW ].

*Dama dama* **Fallow Deer** (0,0,2)
No records for the year outside deer parks.

*Muntiacus reevesi* **Chinese Muntjac Deer** (?1,0,1)
John Burton reported that his neighbours in West Acre Close (5778) saw 'a small deer' grazing on the lawn between the blocks of flats in West Acre Close and Sheep Wood. It is very likely that this was a Muntjac.

*Hydropotes inermis* **Chinese Water Deer**
A single individual was seen at the Priddy Mineries reserve of the Somerset Wildlife Trust (5450/5451) on 30 June. (Letter from Andrew Duff and Ann Lawson in *Mammal News* **127**:12).

The Chinese Water Deer was first introduced into parks in the early 1900s at Woburn Park, Bedfordshire and then at Whipsnade Zoo in 1929-30 from where they escaped and became established in the wild. Currently there are three main populations, centred on Whipsnade Park in Bedfordshire, Woodwalton Fen NNR in Cambridgeshire and the Norfolk Broads. The preferred habitat of the deer is reed beds, swampy ground and woodland such as that found in the Broads and Woodwalton Fen. The Whipsnade population is unusual in that it lives in open parkland with some woodland (Arnold 1993, Corbet and Harris 1991).

If the Priddy sightings can be confirmed it would suggest that the deer seen had been released in the vicinity.

## Gardening for Wildlife

Following the increased interest in wildlife gardening, Rachel Ansell, Phil Baker and Stephen Harris of Bristol University (Ansell *et al.,* 2001) have been studying the effects of gardens on mammals. This was a joint project between the Mammal Society and the People's Trust for Endangered Species.

People 'garden for wildlife' so that they can see the wildlife close to their homes. Many feed birds and mammals and this has a desired result in species such as Foxes and Badgers. The other reason is that people are keen to help conserve wildlife in their area. Whether this is achieved is difficult to prove.

Householders were sent a questionnaire about the mammals using their garden and other issues, such as levels of pesticide use. Of the 3779 questionnaires collected, recording 19,997 mammals, 98.6% recorded at least one species of mammal using their garden. There was an average of 5.3 mammals per garden. 43 different mammals species were recorded, including Dormouse and Otter. Only a few species were recorded regularly, such as Mice, Grey Squirrel, Hedgehogs, Foxes and Bats. It was found that detached houses and bungalows attracted more species, but other factors found to increase the number of

mammals included providing increased food sources, shelter, ponds, compost heaps and woodpiles.

There was no evidence that the levels of pesticide use affect the number of mammals. This probably reflects the fact that the level of pesticide use over the whole neighbourhood will affect the population of mammals rather than individual householders. Hedgehogs were less likely to be found where Badgers resided. All the other species were found in higher numbers where Badgers were recorded. However Shrews, Voles and Mice were less likely to be found in gardens with cats although rats were found in increased numbers!

These results do not provide evidence that Badgers are killing large numbers of Hedgehogs, or that cats are killing large numbers of small mammals. It may be that prey are avoiding gardens with predators.

It is difficult to say whether gardens are a good substitute for the loss of natural habitats. Some species such as Foxes have higher densities in gardens than in rural areas. The survey did show, however, that the habitat surrounding the garden influenced the likelihood of seeing certain species. For example, having water nearby increased the possibility of Mink or Otter in the garden. Woodland probably had the most positive effect over a wide range of species. Urban habitats had the most negative effect on the presence of mammals suggesting that gardens alone are not good habitats for many species due to factors such as the reduction in food, an increase in disturbance and fragmentation of the habitat.

The achievements of wildlife gardeners should not be underestimated. Their contribution to conservation is not likely to be particularly significant, mainly due to the size of land a gardener has under his/her control. This is because most species have a territory covering many gardens. Even Wood Mice range over 1,000 to 20,000 square metres according to the availability of food. Therefore maintaining a mosaic of patches of semi-natural vegetation within urban areas is likely to benefit most species of mammal.

This report was featured in the *Daily Express* of 25 August, 'Mice and voles seek refuge in our back gardens'. It is encouraging to see the National Press taking notice of mammals in a positive way at last.

## Winter Mammal Monitoring Project

Mammal populations need to be monitored to determine abundance, distribution and most importantly population change. Mammals have been somewhat neglected in survey work in the past being less easy to observe and more difficult to identify. In 2001 the British Trust for Ornithology (BTO) and the Mammal Society were awarded the contract, funded by the Department for the Environment, Food and Rural Affairs (DEFRA), to design and run a pilot multi-species winter monitoring project. The pilot will compare two survey methods: 1) a sightings transect across a 1-km square walked between October and

December, and 2) a field signs transect walked across the same square between January and March. It is hoped that by bringing together the experiences and skills of both organisations that the monitoring of mammal populations will be as effective as that undertaken for bird populations.

Big Cats

'Big Cat Killed My Sheep – Farmer's attack fears after beast spotted in fields' (*Evening Post* headline 24 August). A Winford farmer believes that the 'big cat' spotted along the A38 in mid August could have been responsible for killing four of his Sheep over the past year. The animal, described as a 'lioness' was seen by up to a dozen people in fields near the Esso petrol station to the south of Churchill (4458) (*Evening Post* 21 and 22 August). The story prompted another Churchill resident to report an attack on a neighbour's cat over a year earlier. This animal was described as 'Lynx-like, far bigger than a normal cat, with pointy ears and dirty brown coarse fur'. A police spokeswoman said there was no substantial evidence to warrant action at the time and that professional evidence suggested that it was more likely that the injuries were due to a large Dog. On 30 August the *Evening Post* carried yet another 'big cat' story with a report of an animal 'light tan in colour, bigger than a Pig but not quite so big as a Shetland Pony' was seen in a field near Ubley.

'The Mystery Beast of Odd Down: Wild cat spotted stalking near Old Frome Road at night' (*The Wiltshire Chronicle* 5 October). Two residents walking back home from a pub in South Stoke at 11.30 at night reported seeing a 'Lynx' at the junction of Frome Road and Old Frome Road (7461). The sighting rekindled memories of the so-called 'Beast of Brassknocker Hill' (7762), a 'Lynx-like' animal seen in the 1980's.

## Re-Introduction of Native Species

The re-introduction of Britain's native species is far more complex than it first seems, as Britain is a very different place to what it was when these species were present. Reindeer and Tarpan (wild horse) probably died out in Britain when we split from the continent and the Root Vole probably died out a few thousand years later. More recent losses and ones that are candidates for re-introduction are Beaver, Wolf, Bear, Lynx, Wild Boar and Elk. One problem is that there is now an imbalance of species due to 19 introduced mammal species that are well established. This has led to a simple food web that is vulnerable to small changes in the abundance of prey species. There is an underlying pattern of the alien species increasing and the native species to be in decline. A re-introduced species would have to find a niche and will have an impact that will have to be understood before the re-introduction takes place. An introduced large carnivore has not replaced the Wolf, Brown Bear and Lynx. As a result,

Deer are over-abundant and cause problems, and a large predator would restore some balance to the ecosystem. Other species such as Beaver, Wild Boar and Elk would be more problematic. Large Deer numbers already lead to overgrazing of woodland and species such as Wild Boar and Elk would exacerbate the problem. Unfortunately debate over a large predator has been focused on Wolves. The introduction of Lynx would reduce the numbers of smaller Deer species and probably be a less emotive issue. However all re-introductions should be managed as part of an overall conservation gain (*BBC Wildlife* May 2001).

## What the Cat Brought in

In 1997 the Mammal Society carried out a survey of almost 1,000 cats. Each cat owner completed a form with details of the cat, the food it was given and details of species it killed between 1 April and 31 August. During the survey period the cats together killed more than 14,000 different individual mammals. Cats are mammal specialists with 4,000 Mice and 2,000 Voles killed. Almost as many Shrews were killed as Voles. They were not successful at catching Rats as they fought back. The most worrying results were of endangered species. These include Water Shrews, Harvest Mice, Yellow-necked Mice, Water Voles and Dormice. Cats also killed larger mammals such as Rabbits (in large numbers), Squirrels, Weasels, Stoats and two Hamsters! Birds, amphibians and reptiles were also on the list. Most of the cats in the survey were suburban and belonged to responsible owners; 98% were neutered and a third wore bells. The amount of food given to a cat seemed to make no difference to the number of species caught. Males caught slightly more than females and young, slim cats caught more than older, fatter cats. Cats wearing bells killed fewer mammals but the bells gave no protection to birds. Only sonic collars make a difference to the number of birds killed. Keeping cats in at night significantly reduced the number of mammals killed. An experiment with two cats showed that their kill rate reduced by 80% when they were kept in at night. It seemed to deprive them of their desire to hunt in the day also. At night cats have a much larger range – up to 0.9km, four times the daytime range. Therefore it must be recognised that cats may put significant pressure on populations of mammals that are already under threat due to factors such as loss of habitat (BBC Wildlife February 2001).

*Acknowledgements: Our thanks to all those who provided records and information for this years report:*

Richard Bland (RB), Des Bowring (DB), Alan Britton (AB), John Burton (JB), Dave Clarke (DC), Paul Chadwick (PC), David Davies (DD), Gareth Jones, Chris Klee (CK), Dennis Marsh (DM), Joan Marsh (JM), Edward Niblett (EN),

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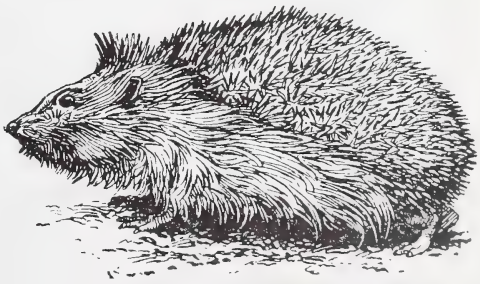
Engraving from *The Harmsworth Encyclopedia,* page 3075 (1905)



*Hedgehog.*

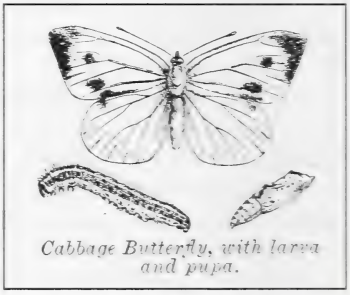
*Proceedings of the Bristol Naturalists' Society (2001)* **61**:110-111

# THE MILLENNIUM ATLAS OF BUTTERFLIES IN BRITAIN AND IRELAND

**Asher J., Warren M., Fox R., Harding P., Jeffcoate G. and Jeffcoate S. (2001) Oxford University Press.**

A review by Ray Barnett

Every so often a book comes along which is obviously of such quality and of such a high standard that it immediately becomes a classic in its field. The Millennium Atlas of Butterflies in Britain and Ireland is one such book. The previous book to this, which summarised the status of British and Irish butterflies, was Heath, Pollard and Thomas's *Atlas of Butterflies in Britain and Ireland*, which was published in 1984 by Viking. Although the authors were pre-eminent and the information of the highest quality, that book never achieved the recognition and respect that the Millennium Atlas already has, and indeed the earlier publication is still largely unknown to many amateur lepidopterists.



*Cabbage Butterfly, with larva and pupa.*

The Millennium Atlas is the culmination of the Butterflies for the New Millennium project that collated an enormous recording effort carried out between 1995 and 1999. It was a project launched by the national Biological Records Centre and the Butterfly Conservation organisation. However, this book is far from just a series of distribution maps. It brings together the most recent knowledge and research on our butterfly fauna, on their ecology and the habitats they live in. Computerised analysis of the data has enabled, for example, the point at which a species changes from being double-brooded in the south of the country to being single-brooded in the north, to be identified and plotted. Data such as that could enable further surveys to establish whether the transition point is moving north or south and so supply evidence to climatic change models.

The book is divided into chapters that set the background to butterfly recording as a whole in the British Isles, describe the habitats that butterflies live in, how the data can be interpreted, individual species accounts, how distribution and abundance has and is changing and finally discusses the conservation issues that emerge from this seminal work. No doubt for most people the species accounts will be the pages that will be turned to most frequently and with good reason. Each is illustrated with an excellent colour photograph of the butterfly and national distribution map. Larval and habitat colour photographs often add further to the written word which begins with a summary and with conservation status and European or worldwide range, as additional sub-headings. Food plants, habitats, life-cycle and colony structure,

distribution and trends, (here and in Europe), interpretation and outlook are followed by a list of key references. Phenological graphs are often provided to show the average time of flight in a year. The result is the most comprehensive and up to date information on each species that is available anywhere. There are many nuggets of interesting information throughout these accounts.

Aside from the species accounts, it is the final two chapters that should be given most attention. The analyses of change to butterfly populations and the causes of those changes, teases out the complexities created by changing land management and climatic variation. Habitat loss, fragmentation and degradation are explained and linked to the fate of our butterfly populations. This is carried further with the discourse on conserving butterflies and the opening sub-title to this section says it all 'Butterflies in crisis'. It points out that concern about our butterflies has been around since the 19th century and assisted in stimulating the establishment of nature reserves. It also reports that declines in butterflies have speeded up at the end of the 20th century. Twenty-five species are listed now as being conservation priorities, which is approaching half of all species, we possess! This section examines in detail the factors that may affect butterflies, from further habitat loss to climatic change. The message it sends is a very powerful one and it is to be hoped that this book is used and seen as a means to raise awareness and, most importantly, stimulate action to prevent more of our butterflies from disappearing for good.

In summary, this is a very important work. The information it contains and the conclusions drawn from that are of relevance not just to butterfly enthusiasts and naturalists but to all who have any interest in the environment that we live in, and particularly those that can influence the way we use and look after that environment. It should be on everybody's bookshelf and the authors should be thoroughly congratulated.

Oxford University Press 2001
(£30; 433pp; ISBN 0 19 850565 5)

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The illustration in the text is from the *Harmsworth Encyclopedia* (1905) page 1058.

## THE RED KITE
### Ian Carter
A review by Richard Bland

The Red Kite is a large and beautiful bird that flies slowly, has little fear of man, performs a valuable service by eating dead meat of all kinds, and lays beautiful eggs. These characteristics have ensured that human persecution in past centuries drove it to the point of extinction, and still threaten the recent attempts at re-introduction. Most Red Kites still die from being poisoned by eating bait put out for Rats or Foxes, being shot, or having their nests raided.

The lamentable history of this noble hawk is described in objective detail by Ian Carter, who has been deeply involved with the re-introduction project. The book is the most recent in a series of monographs on British birds, and it sets a very high standard for the future combining stunning photographs, excellent drawings, and detailed tables and figures, and I cannot commend it too highly

Arlequin Press 2001
(£22.50; 188pp; ISBN 1 900159 61 9)

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*Kite, or Glead.*

'The Kite or Glede is not uncommon in England, and is spread over Europe, Asia, and Northern Africa. It is especially hated by the farmer for its predations on his poultry, and its appearance is the signal for a general outcry among the terrified poultry, who perceive it long before the keenest-eyed man can distinguish it from a casual spot in the distant sky. The sportsman also detests it for the havoc which it makes among the game, - possibly the kite hates the sportsman for the same reason'

The picture on the left is from *The Harmsworth Encyclopedia* (1905) page 3614, and the above quote is from *'Popular Natural History'* by the Rev. J.G. Wood (1904) page 138.

Wood engraving by Joan Hassall.
Reproduced from *Collected Poems* by Andrew Young, 1950 Jonathan Cape
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## COUNCIL 2001

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| | | |
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| | Hon. Secretary | Mr A G Smith |

Other members of Council:

Mr P Belcher, Mr J Martin, Mr W Morris,
Dr H E Rose, Mrs M Trump, Mrs H Willmott
Mr N J Wray

## REPORT OF COUNCIL 2001

### Aims

The promotion of education and research into natural history, including geology, with special reference to the Bristol District, and the promotion and conservation of the British fauna and flora, and protection of geological and physiographical sites.

### Organisation and Membership.

At the Annual General Meeting in January 17 officers and members of Council were elected, to act, together with the officers of Sections, as the Trustees of the Society. Members were also elected to the Publications, Library, Field and Hector Hockey Committees. Mrs W. Budd was co-opted in September as Honorary Secretary in place of Mr P. Belcher who wished to stand down, and to whom Council is grateful for his hard work. Miss S. Garden retired after 13 successful years as Chairman of the Field Committee. Council agreed a formal procedure for proposing Honorary Membership. Council Meetings continued to be held at Clifton College, for which grateful thanks are extended to the Headmaster.

At the end of the year membership of the Society stood at 626, an increase on the previous year. Deaths were reported of Miss J.M.D. Harding, Mr. A.D. Lucas and Mr W.J. Redmond. A notable bequest of £5000, received from the estate of Mr Redmond, was added to the Memorial Fund.

### Education

Despite foot-and-mouth disease, which led to the cancellation of part of the Summer programme and of some survey work, the Society's Sections managed to achieve an extensive programme of indoor and field meetings.

The Library continued to flourish. A start was made on creating a computer catalogue. A special Library event was staged successfully in October, aimed at new members, but also attracting established members on their first visits. The Library is housed in the City Museum, and the Society continues to be grateful to the Head of Museums for this facility.

### Publications

The 2000 Proceedings of the Society '*Nature in Avon*' was published in October, meeting publication schedule for the first time in many years. Changes were made in style and content, with four pages of colour plates. The issue was received well by the membership. It was reported that the 1999 Avon Bird Report had won the British Birds Best Annual Bird Report award, for a second time. The 2000 Avon Bird Report was published in November. The Bulletin continued to develop in character, resulting in a positive response from members. A 3-month Bulletin was issued for June to August, due to many cancellations of field meetings because of the foot-and-mouth disease crisis. The sterling efforts of Brian Frost's team of distributors continue to save the Society substantial postal charges. The Society's website underwent positive changes, resulting eventually in purchase of the domain name www.bristolnats.org.uk. Such easier access, along with linkage to other organisations, should result in greater numbers of 'hits' and further interest in the Society.

### Research

Member's records, on a wide variety of species recording schemes, continued to be collated and reported in the *Proceedings* and *Avon Bird Report*. The Society assisted the City Council and the Wildlife Trust in organising Bristol Bird Watch, a winter survey, supported by 1500 residents of Bristol, which provided new evidence of the nature of the city's biodiversity. As a further support to the City's biodiversity project 65 x 1 km squares of the City, slightly more than half of the total area, were surveyed, using the Breeding Bird Survey methods of the British Trust for Ornithology. The Society maintained close links with staff in the University of Bristol, the Bristol City Museum, and with the Bristol Environmental Records Centre, where many members' records are stored.

### Conservation

The Society maintained its overview of conservation issues in the Bristol District, and continued its connections with Wildlife Trusts. The Geological Section continued to carry out the work of conserving geologically significant sites in the region. Mammal Section members worked together with the River Avon Catchment Otter Group in monitoring the welcome increase in the species in the Bristol District.

### Promotion and Publicity

Membership leaflets were distributed widely, particularly through Libraries; this remains our most successful recruitment avenue. A monthly poster, advertising forthcoming meetings, was also circulated.

Stands were taken at Bristol Royal National Institute for the Blind, the University of Bristol Freshers' event, and the Bristol Flower Show, with positive results. Promotional material, including a banner and large poster display, attracted attention at these events. The collection of photographs by the late Dr Keith Hewitt was also used effectively.

Ann Wookey and Richard Bland with the BNS stand at the Bristol Flower Show (*Roger Symes*).

### Acknowledgements

Grateful thanks are due to members who have contributed their time in many ways, in helping the Society to meet its objectives

## GENERAL FIELD MEETINGS

14th April Miss Sheila McCarthy London Wetland Centre

A chilly damp day did not diminish the enjoyment of this magnificent, imaginative conversion of disused reservoirs into a variety of wetland habitats. Many birds were seen from the hides and there was an informative guided tour for those who wished it. A return summer visit was unanimously requested, particularly to see the varied plantings.

8th September Don Cullen Portland and Lodmoor

A sunny but very windy day, the wind keeping many of the birds some distance away at the Bill. However, there were good views of birds, including Gannets, Fulmars and Manx Sheerwaters. On the west coast a Merlin was seen flying low and at Ferry Bridge there were stunning views of three red Knot. Lodmoor provided sightings of many birds.

13th October Miss Sheila Garden Tintern

In good weather we walked the Tintern Trail, starting from Tintern Abbey, passing through steep woodland and dropping down to the Angidy River and Iron Works. The latter was a fascinating piece of the areas's industrial heritage. Unluckily the autumn colours were not at their best. Birds were heard more than seen. At the end of the walk we visited the old station at Tintern Parva.

## REPORT OF THE BOTANICAL SECTION 2001

At the Annual General Meeting held on 21st January, Officers and Committee Members were elected as follows :- President: Mr A.G.Smith, Hon.Secretary Treasurer: Mrs P. Millman,

Committee Members: Ms L.Houston, Mrs C.Kitchen, Mr M.Kitchen, Mr C.Hurfitt, Mrs M.Webster, Mrs S.Parker, Mr T.Titchen, Mr P.Quinn.

Six indoor meetings were held as follows:

| | | |
|---|---|---|
| 22nd January | AGM and Presidential address | |
| 26th February | The Somerset Rare Plants Group | Liz McDonnell |
| 26th March | Plants in Folklore | Juliet Bailey |
| 22nd October | Biodiversity of the Bristol area | Phil Quinn |
| 19th November | Plants of disturbed habitats | Phil Wilson |
| 17th December | The Service Tree lost and found after 1000 years | Mark Kitchen |

Our indoor meetings, which were well attended, have included Dr Phil Wilson speaking on his work with Plantlife on 'Plants of Disturbed habitats', and Liz McDonnell on 'The Monitoring Work of the Somerset Rare Plants Group'. 'Plants in Folklore' by Juliet Bailey gave us a most entertaining evening with members contributing many snippets of folklore known to them.

Outdoor meetings were as follows

| | | |
|---|---|---|
| 10th February | Mosses at Goblin Combe | Ann Bodley |
| 29th April | Weston Big Wood | Bill Dixon |
| 2nd June | Woodchester Park | Jon Rees |
| 19th August | Clearwell Meend | Mark and Claire Kitchen |
| 2nd September | Avon Saltmarsh from the Towpath | Pam Millman |
| 29th September | Sorbuses of the Avon Gorge | Libby Houston |

We were fortunate that the foot-and-mouth epidemic did not greatly curtail our outdoor program, and the two meetings we had to cancel have been re-arranged for 2002.

An evening meeting at the University Botanic gardens proved very popular with 22 members attending.

Pam Millman

## GEOLOGICAL SECTION

presented at the AGM on Wednesday 16 January 2002

The following excursions and activities were organised for the 2001 period:

| | |
|---|---|
| 25th March | Geological site clearance project – Cherry Garden railway cutting, Willsbridge, South Gloucestershire. Leader: Simon Carpenter and Avon RIGS Group |
| 15th April | Geological site clearance project – digging for coal at Staple Hill railway tunnel, Bristol Leader: Simon Carpenter and Avon RIGS Group |
| 16th June | Banwell Bone Caves, The Follies and Banwell Tower Joint event with Bath Geological Society |

| | |
|---|---|
| 8th July | Geology and wildlife in Mid-Somerset<br>Leader: Hugh Prudden |
| 27th August | The Rock It! event<br>Joint event with Bath Geological Society<br>and Avon RIGS Group |
| 10th November | Radstock Museum<br>*Joint event with Bath Geological Society* |

The first two field excursions for 2001 were cancelled due to foot-and-mouth disease. Bath Geological Society is thanked for the opportunity to make the June, August and November excursions joint events. Field leaders and all participants are thanked for their support of the field programme for 2001.

Simon Carpenter, Field Secretary.

## REPORT OF THE MAMMAL GROUP

The mammal group concentrated on field trips this year despite the impact of foot-and-mouth disease on the countryside. The emphasis was on Otter monitoring in late winter and autumn. This was in partnership with the Avon Wildlife Trust North Somerset Otter Group. This is a new venture with its aim to find the extent of Otters in North Somerset by surveying the watercourses in the area. There was early success with Otter signs throughout the area showing that Otters are moving north from Somerset.

A small mammal trapping exercise was arranged for the watch Group at the Grove School, Nailsea during the autumn. This is the second year this has been organised and has proved to be very popular.

There were no specific indoor meetings although there was a general society meeting about Water Voles. Field work is planned in 2002 as follow up to this talk. Regular contributions continue to be made to the Society's bulletin and mammal records are collected from members and will be shared with the Bristol Regional Environmental Records Centre.

David Trump, Secretary of the Mammal Group.

## REPORT OF ORNITHOLOGICAL SECTION FOR 2000.

At the AGM, on January 21st 2000 no President was elected – the Committee's had been unable to find anyone willing to stand. Richard Bland agreed to continue, temporarily, as Acting president. Mary Hill was re-elected as Secretary Treasurer. Brian Tizard was elected to the committee, where he joined the re-elected members Don Cullen, Paul Farmer, Barry Gray, Mike Haines, Alan Kelly, Sheila McCarthy and Harvey Rose.

Members were active in fieldwork. They were involved in the National BTO Breeding Bird Survey, Common Bird Census, Garden Bird Survey, Heronry count, Nest Record Card Scheme, National Lapwing, House Martin and Garden Birdwatch surveys and the WWT Wetland surveys of wildfowl and waders. Members also helped with a number of local surveys, recording over-wintering Warblers, the local survey of birds in gardens in winter, a winter bird count scheme, a count of Rookeries in the area, a breeding season tetrad survey and the scheme to estimate the numbers of birds breeding in gardens.

The programme appeared to have been very successful, well attended and well received in 2000, there were good attendances at all meetings (except for those field meetings when the weather was very bad)..

*The following (6) indoor meetings were held -*

| | | |
|---|---|---|
| 21st January | Following the AGM | John and Sue Prince *New Jersey in Spring* |
| 16th February | Tony Hawkins | *Desert birds in Israel and Arizona* |
| 8th March | David Kjaer | *Birds of Lesbos* |
| 5th October | Fred Quinney | *Sparrow hawks* |
| 1st November | Peter Basterfield | *Birds of East Africa* |
| 1st December | Peter and Barbara Barham | *Penguins (and other birds of the S. Oceans)* |

The following 15 field meetings were planned (14 were held) -

| | | |
|---|---|---|
| 22nd January | Slimbridge | Leader, local Warden |
| 13th February | Dawlish, Exminster, Powderham, Topsham | Richard Bland |
| 26th March | Brean Down | Barry Gray |
| 12th April | Leigh Woods | Richard Bland |
| 29th April | Sand Point | Paul Chadwick |
| 3rd May | Weston Moor | Lyndon Roberts |
| 18th May | Frome Valley | Richard Bland |
| 28th May | Blaise | John Tully |
| 14th June | Eastwood Farm | Barry Gray |
| 24th June | Wentwood | Sheila McCarthy |
| 6th July | Marshfield | Paul Chadwick and Paul Farmer |
| 2nd Sept | Slimbridge | Trevor Evans and Warden |
| 14th October | Sand Point for migration | Paul Farmer |
| 19th November | Severnside | Brian Lancastle |
| 28th December | Chew | Paul Farmer |

The walk in Leigh Woods was cancelled because of bad weather, all the others took place.

## REPORT OF THE INVERTEBRATE SECTION, 2001

Ray Barnett and Tony Smith were elected Honorary President and Honorary Secretary respectively at the AGM held on 27th January 2001 at the City Museum & Art Gallery, Bristol. A short debate was held about the future of the Section and the suggestion put forward that a workshop approach to meetings might be appreciated more than general talks in the winter.

Two indoor meetings were held as follows:

| | |
|---|---|
| 27th January | Section AGM |
| 17th March | David Raynor, *Surfing the net* |

## REPORT OF COUNCIL

The following field meetings were held:

| | | |
|---|---|---|
| 1st July | Steve Preddy (joint meeting with Cam Valley Wildlife Group) | *Dragonfly Workshop* |
| 15th July | Janet Boyd | *Ashcott Corner – The Shrill Carder Bee* Bombus sylvarum |
| 25th July | Hazel Willmott | *Sand Bay – strand-line fauna* |
| 29th July | David Gibbs | *Goblin Combe – general entomology* |
| 19th August | Tony Smith | *Thornbury- general entomology and mollusca* |
| 23rd September | John Robbins (joint meeting with Bristol and District Moth Group) | *Leaf mines at Goblin Combe* |
| 27th October | David Gibbs | *Invertebrates of fungi* |

Ray Barnett

Wood engraving by Joan Hassall.
Reproduced from *Collected Poems* by Andrew Young, 1950 Jonathan Cape
by kind permission of Brian North Lee, Ruth Lowbury and of the publishers.

Time made thee what thou wast - King of the woods;
And time hath made thee what thou art - a cave
For owls to roost in. Once thy spreading boughs
O'erhung the champain; and the numerous flock
That graz'd it stood beneath that ample cope
Uncrowded yet safe-shelter'd from the storm.
No flock frequents thee now. Thou hast outliv'd
Thy popularity and art become
(Unless verse rescue thee awhile) a thing
Forgotten, as the foliage of thy youth.

While thus through all the stages thou hast push'd
Of treeship, first a seedling hid in grass,
Then twig, then sapling, and, as century roll'd
Slow after century, a giant bulk
Of girth enormous, with moss-cushioned root
Upheav'd above the soil, and sides imboss'd
With prominent wens globose, till at the last
The rottenness, which Time is charg'd t' inflict
On other mighty ones, found also thee-

William Cowper 1731-1800
From 'Yardley Oak'
Reproduced with permission, from '*Trees Be Company*' – an anthology of poetry
Edited by Angela King and Susan Clifford for Common Ground

## THE SOCIETY'S ACCOUNTS

Owing to factors beyond the Treasurer's control, the recent accounts were not ready at the time the Proceedings went to print.

## COPYRIGHT

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Terry Smith, Editor

# GOBLIN COMBE ENVIRONMENT CENTRE AND CAMPSITE

A COMMUNITY AND RESIDENTIAL CENTRE FOR NORTH SOMERSET.

**COUNTRYSIDE ACTIVITIES**

Situated in a rural location near Cleeve, Goblin Combe Environment Centre is an education and training organisation with an emphasis on the environment, biodiversity and sustainability. It has considerably developed its role and activities over the past three years. Based on two sites the centre is able to offer educational facilities at the Old School House and our Campsite has residential facilities for 24, and camping for 80.

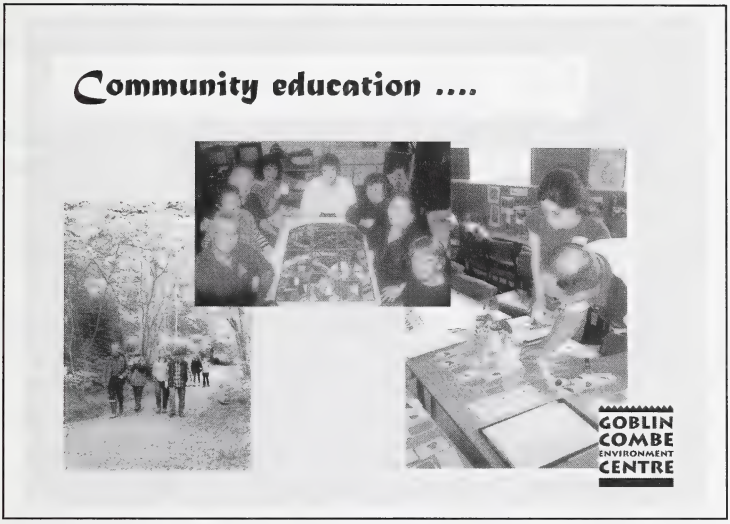
It is now well established as a provider of environmentally based community education, a wide range of outdoor activities and residential facilities for user groups with specific requirements.

**SECLUDED NATURE**

The secluded and intimate nature of the campsite lends itself to close working with challenging groups. In the last two years the residential facilities have been used by groups as diverse as schools, scouts, recovering drug addicts and 'rough sleepers' rehabilitation groups.

**WELCOME**

Goblin Combe Environment Centre is keen to welcome new user groups and is able to provide a flexible package of services including training courses, outdoor activities, environmental tasks, instruction and catering.




**COMMUNITY TRAINING**

As a franchise partner with Weston College, the centre offers a wide range of adult evening and daytime environmental training courses. Local community groups who are beginning to see it as "theirs" have increasingly used the centre. These courses are open to the public but can be arranged to suit the needs of specific groups, including school groups. Accredited courses can be run giving participants the opportunity to gain a qualification. Courses include natural history, countryside skills and crafts. The centre is also able to offer advice to groups wishing to take on their own community projects. If you would like to find out more about Goblin Combe Environment Centre, our courses, or to arrange a visit to the site please contact:

***Kenton Keys**: Tel: 01934 833723 or 01275 888555,*
*e-mail:Kenton.Keys@n-somerset.gov.uk , or by post at: Goblin Combe Environment Centre, Plunder Street, Cleeve, BRISTOL BS49 9PQ.*

**Bristol Museums & Art Gallery Service**

Bristol City Council's Museums Service traces its history back to at least the 1820s when the Museum of the Bristol Literary & Philosophical Society opened under the first curator, John Samuel Miller. It was this, the Bristol Institution, which also was to give rise to the Bristol Naturalists' Society, and the Society and Museum have enjoyed close links ever since.

Despite changing sites twice, the last occasion due to the damage inflicted on the museum and its contents in the 1940 Blitz, the museum collections have continued to grow, and reflect the biology and geology of the Bristol region (and to a lesser extent elsewhere). Together these collections are the largest of their type held anywhere in the south west of England and are an important source of information for naturalists, both professional and amateur.

The uses of the collections are many and varied. At their most basic level they form a reference collection that can be used to assist others in identification of species being recorded today. For example, the examination of a 19th century specimen of a hoverfly may aid the identification of a similar individual, recently captured, which can then be released unharmed. This principle will apply to many different groups of organisms, and similarly minerals and fossils may be best identified by comparison against the reference collections.

Increasingly the collections are also used to show trends over time in the varying populations of species, to help suggest why such changes take place and to assist in conservation of endangered species

The collections of plants, animals, rocks, minerals and fossils and associated ephemera e.g. collectors' notebooks, are held in trust for the general public and are available to view by making appointments with the relevant curatorial staff. They are here to be used by you, as is the expertise of the staff employed to care for and maintain the collections.

In addition to discovering how the specimens may assist you, there are also ways in which you can add to the continuing archive of knowledge that the Museum has on the local environment. In particular you may be able to provide new specimens for the collections, subject to strictly obeying the laws and ethics of collecting natural science specimens. Freshly killed bird specimens collected from the roadside and preserved in the museum, for example, may reveal important information in future years as to the state of the environment and the absorption of chemicals into the bodies of what are now common species. Fossils collected from an exposure may be easily found now but that exposure may be built on and the opportunity to study the fossils all but lost.

**Ray Barnett**, Collections Manager, City Museum & Art Gallery, Queen's Road, Bristol BS8 1RL; tel.: 0117 9223571;
e-mail: general_museum@bristol-city.gov.uk
website: www.bristol-city.gov.uk/museums

**Bristol Regional Environmental Records Centre (BRERC)**

BRERC has been collecting, collating, managing and making available data since 1974. Many people have contributed records, as have many organisations, community groups, businesses, education establishments and authorities. Managing and making that data available has required much investment by BRERC in resources, research projects, development of database systems and validation and verification of the data. Most data provided to BRERC is in paper format, although increasingly we are receiving this in digital formats. Most of the data required by enquirers is made available to them by BRERC in computer generated mapped formats.

Currently BRERC hold about 700,000 species records on a Geographical Information System (GIS), and each record includes information added by BRERC. Digitised boundaries and information on the BRERC GIS includes all designated biological and geological sites, all known semi-natural habitats, Phase I habitat coverage for over one third of the BRERC area and various other sites and habitats drawn from projects such as Bristol Grasslands, Cotswold Grasslands and the Ponds project.

As well as the data search enquiries, BRERC provided data is routinely used to screen planning applications by various local authority departments and organisations such as the Environment Agency, Avon Wildlife Trust and English Nature. Between 15000 and 25000 planning applications are made each year in our region. Information provided by BRERC is also used for determining the status and distribution of species and habitats locally, regionally and nationally. We also provide data for use in contaminated land strategies, pollution control, emergency planning, habitat and species management and reporting to government on regional and national biodiversity targets.

BRERC is a 'not for profit' organisation and is administered through Bristol City Council on behalf of Bristol City, South Gloucestershire, North Somerset and Bath & North East Somerset Councils, English Nature and Avon Wildlife Trust. There is a Steering Committee that agrees the policies and strategies of the Centre. The Steering Committee comprises the Collections Manager of Bristol City Museum (Line Manager for BRERC personnel and administration), Ecologists of the Unitary Authorities, the Conservation Officers of English Nature and Environment Agency and the Director and Conservation Officers of Avon Wildlife Trust. The Steering Committee reports to a Joint Advisory Committee (JAC) consisting of the above officers and elected Councillors of the Unitary Authorities. The JAC sets the budget and work programme.

**Tim Corner**, Manager, BRERC, Ashton Court Visitor Centre, Ashton Court Estate, Long Ashton, Bristol, BS41 9JN; tel.: 0117 9532140; fax: 0117 9532143; email: brerc@btconnect.com; website: www.brerc.org.uk

## Avon Wildlife Trust

The Avon Wildlife Trust is your local charity working full time to protect the wildlife in your area. With the support of more than 5000 members we look after over 35 nature reserves, campaign on issues which threaten wildlife and encourage everyone to be more concerned about our natural environment. If you would like to know more about the Trust and how you can support our work through donations, membership, legacies or volunteering please ring us at the Old Police Station.

### The Old Police Station

The Trust's head office is located at the Old Police Station on Brandon Hill. This building has a fascinating history and is the centre of the Trust where all administration work takes place. Ring us with your wildlife enquiries and we'll do our best to help you. Volunteering groups leave here every Wednesday and Sunday – anyone is welcome to join in. Pick up a volunteering programme if you are passing or ring and we will send you one!

### Folly Farm

Folly Farm is a 250 acre nature reserve and working farm owned by the Trust. It lies close to the Mendip Hills and offers impressive views over the Chew Valley meadows, hedgerows, ponds and a range of farm buildings dating back to the 17th century. School children come here to meet Vikings, Saxons and Celts or to learn how teddy bears used to be self-sufficient. The reserve is open at all times and includes the 'Access for All' trail, - a circular nature walk accessible to all users, especially those in wheel chairs. The trail is way marked with blue arrows, has good views of the reserve and passes a badger sett on the way! More details from the Old Police Station.

### Brandon Hill

Brandon Hill is one of Bristol's finest parks and is steeped in history – from 1174 when it was dedicated to St Brendon (from which the hill derives its name) until the 1980s when the Trust adapted five acres as a nature reserve. See the newly planted wild flower meadow and the pond, which is home to frogs toads and newts (plus a variety of insects and plants) and is a haven for birds and squirrels. Stand still for a while and listen to the birds – chiff-chaffs, blackbirds, and chaffinches can often be seen and heard.

### Willsbridge Mill

The Barn at Willsbridge Mill houses the Education Centre, where children and young people can learn about all things ecological. Structured programmes run for schools throughout the school terms and special programmes are organised during the holidays for 5-11 year olds.

The reserve is open all the time – why not go along and see the new Heritage Trail, which celebrates the fascinating local history and wildlife that has shaped the landscape over the last 1000 years?

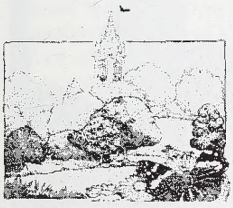
More information can be obtained from Willsbridge Mill itself or from the Old Police Station.

***RESERVES*** We have more than 35 reserves all over the old Avon area, covering a wide variety of habitats from wetlands to caves, from woodlands to meadows. During work in Browns Folly a couple of years ago a bat that was 28 years old was found - way beyond the normal life expectancy for bats in the wild.

***EDUCATION PROGRAMME*** We can offer a wide variety of activities for schools at Willsbridge Mill, Folly Farm, or at a reserve near your school. We cater for all ages, from reception to university, and can tailor the programme to fit in with your school/college projects.

***SCHOOL GROUNDS PROJECT*** We can advise on improving school grounds, and also work (with or without the pupils) to make the changes. Ponds, sensory gardens and willow sculptures make school a more pleasant place to be and are learning centres in themselves.

***BIRDWATCH*** With sponsorship from Bristol City Council we organise the Bristol Birdwatch each year. This runs from October to March and members of the public are eager to help - over 2000 packs were sent out in 2001. The Bristol Ornithological Club collates all the information, which is available for all to see. As the information for more years becomes available a really good picture of what is happening to the birds of Bristol will emerge. Contact the Old Police Station to be put on the list for a free Birdwatch pack.



***CITY CENTRE NATURE TRAIL*** A wonderful concept to show people that there is a lot of wildlife to be seen in the city centre and around the docks. Leaflets are available - you can get yours from the Old Police Station.

***HOW CAN YOU HELP?***

There are lots of ways to get involved:

- become a member of the Trust. Your membership entitles you to local and national Wildlife magazines three times a year, reduced fees for the events organised by the Trust, permits to go to the reserves that are closed to the public. If you sign up to direct debit the first year of your membership will be free.
- make a donation so that the Trust can continue to do it's work. A lot of our funds come from the lottery or from landfill tax, but they will only provide a percentage, and we have to match funding with them to be entitled to the money.
- remember us in your will - we can give you a leaflet to tell you how to do this - it is a very simple process!
- become a volunteer. Volunteers are the lifeblood of the Trust and a job can be found for anybody who is willing. Most of our volunteers like to get out and get muddy, but there are many more who help in the offices, with the web site, with the education programmes and much more. We'd love to hear from you.

**Please contact us if there is anything we can do for you - or that you can do for us!**

***The Old Police Station,*** 32 Jacobs Wells Road, Bristol, BS8 IDR. Tel. 0117 9177270;
E-mail mail@avonwildlifetrust.org.uk ;
***Willsbridge Mill,*** Willsbridge Hill, Bristol, BS30 6EX. Tel. 0117 9326885 Web site
www.avonwildlifetrust.org.uk

# Chew Valley Lake

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Mark at Bath on

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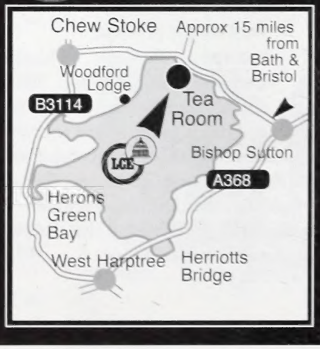

## INSTRUCTIONS FOR AUTHORS

The editor welcomes original papers on the natural history of Avon and surrounding areas for consideration for publication in the Proceedings. Inexperienced authors may obtain advice from members of the Publications Committee. Authors should remember that their readers may not be specialists in the particular subject, and that unnecessarily technical language can be a barrier to understanding.

All papers for consideration should reach the editor by the end of November for publication in the following year. If there is likely to be a problem with this, the author should contact the editor in advance. All Society Reports and Biota should reach the editor by the end of January in the year of publication.

Manuscripts should be double-spaced with wide margins and printed on one side of the paper only. Authors should retain a copy. The wording should follow the style and format of the Proceedings. An abstract should be supplied, and the text should be organised with appropriate headings and sub-headings. Captions to illustrations should be given separately at the end of the text. Abbreviations should be defined on first use, but these should be avoided in the abstract. In addition, whenever possible, text should be submitted on a disk as a file produced using a recent word-processor program (preferably Word 2000). Please specify the software and version used. The disk and the final hard copy version of the manuscript should match exactly.

Originals, not copies, of photographs, slides, line drawings, diagrams and maps should be submitted, returnable on request. Drawings and other diagrams should not be more than twice final size and made in monochrome. Photographs may be submitted as prints in colour or monochrome. These will normally be reproduced in monochrome, though consideration will be given to their publication in colour. Graphs, charts and simple diagrams should be produced by computer graphics: advice and help with this are available. Permission to reproduce copyright material is the responsibility of the author.

References should be listed at the end of the text, in alphabetical order of the first author's name, and should take the following form. (with book and journal title in italics and first line hanging).

*Book*: Author (Date). *Title*. Place of publication: Publisher. - e.g.

Rackham, O. (1986). *The history of the countryside*. London: J.M. Dent.
Clapham, A.R., Tutin, T.G. and Warburg, E.F. (1952) *Flora of the British Isles*. Cambridge at the University Press.

*Paper*: Author (Date). Title. *Journal Name*, volume (part), page nos. - e.g.

Ross, S.M. and Heathwaite, A. L. (1986). West Sedgemoor: its peat stratigraphy and peat chemistry. *Proceedings of the Bristol Naturalists' Society*, **44**, 19-25.

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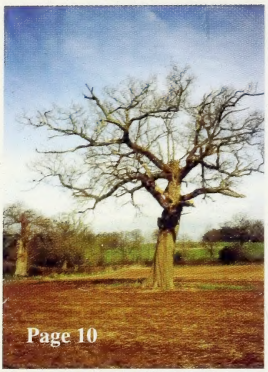

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*Rerum cognoscere causas* - Virgil

*Front Cover* – Ancient Yew Tree at Churchill Churchyard. Photograph by Tim Hills.
*Above, marked* * - Hoverfly *Criorhina floccosa*, male. Photograph by David Iliff.